Claremont Colleges
Sixth Annual Reading Conference
Summer Session 1941

Sponsored jointly by Alpha Iota Chapter
of Pi Lambda Theta and Claremont Colleges

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PREFACE

Peter L. Spencer, Ph.D., Claremont Colleges

This yearbook contributes significantly to the excellent body of literature which has been developed by previous conferences concerning problems with reading. Claremont Colleges and Alpha Iota Chapter of Pi Lambda Theta are justly proud of the accomplishments of these conferences during the past several years. For the first few years the conference papers were presented, but no recording was kept of them. Many times requests were made for opportunities to contact again the ideas of the conference speakers.. This led to the reporting of the formal papers as a yearbook. This issue is the sixth of a notable series. We are proud of the fact that the Claremont conference is the pioneer conference series devoted to the problems with reading and that through the conference sessions many people have secured definite help toward developing better techniques, procedures, and materials for use with reading.

The Claremont conferences have been designed to explore the possibilities of improving reading instruction and reading accomplishment by developing and implementing a more tenable conception of the nature of the reading process. Most definitions of reading define it in terms of a special type of stimulation. For example, "Reading consists in determining the meaning of printed word symbols" is such a definition.

The conferences at Claremont treat the subject of reading more broadly than that. They are designed to consider the fundamental nature of the reading act, regardless of how that act may be stimulated. The conferences also consider the problem of developing better practices and materials for use with many types of application of reading behavior.

For example, reported in this yearbook are discussions of the reading of art, of music, of personalities, and geographic and socio-economic situations, as well as the more usual areas of consideration such as psychological and instructional procedures calculated to assist educators with the narrow applications of reading which are typical of current school practices. The nature of vision and of the problems with its use and measurement are treated. Finally there is reported a dramatic account of how "A teacher learned about reading".

The reading of art. Mrs. Ames discusses two major fields of the visual fine arts, indicating some of the hazards to facile "reading" behavior in their regard. She points out ways in which modern art education is directed toward the developing of abilities to "read art" effectively. Those views are further extended and amplified by Mr. Bulliet who states, "The language of art cannot be understood until we take the trouble to learn that language. Picasso says one thing to the illiterate in art; something else to the attentive and resourceful student". Miss Rice discusses the prevalence of fine artistic productions in the field of children's literature. These papers will prove of value to teachers.

They call attention to a very important and somewhat neglected part of the field of reading.

The reading of music. Mrs. Nohavec, in presenting "the functioning of fundamental reading concepts in music education", pertinently points out that, "There is a vast difference between a musical education or an education in music and an education through music". She discusses the problem of teaching pupils to "read" music with such ability that they may achieve an education through music. This problem is treated again by Mr. Pattison in his paper on the "Fundamentals of interpretation". He treats of some of the means for attaining the 'intuitive penetration' and 'the singing state of mind similar to that out of which a composition was born' which are so essential for efficient reading of music. These discussions, while particularly appropriate with reference to the reading of music stimulation, are none-the-less applicable for reading other types of situations. Every field of instruction or of regard has much in common with every other field.

Reading the soil. Mr. Reddick contributes significantly to educational theory when he points out that literacy is more than mere skill with letters. He says, "The backwoodsman is generally considered to be ignorant and illiterate, but if we view him in the light of this new concept we can see readily that he is well read". This paper on "The Applications of reading techniques to soil conservation" will repay anyone's time spent with it. It illustrates very clearly the advantages of a larger and more tenable conception of the scope of reading material with which people must somehow become skilled. It shows the value of Agassiz's injunction, "Take your text from the trees and books and not from the booksellers".

Visual problems. Educational practices have very largely taken for granted a well functioning visual ability. Only recently have we discovered how faulty such an assumption really is. The Claremont conferences have each year emphasized the need for further study and understanding of the visual process. In this report are four articles directly pertaining to that area and which is largely concerned with it. Dr. Clark, speaking from the optometric field and Dr. Gardner, from the field of medicine, discuss the problems with the measurement of visual ability and the relationship of visual anomalies to ability to learn through the use of the visual sense. It is significant to note that they point out that good vision is something which one must achieve through learning. Good vision is developed. It is not innate.

Mr. Dresser indicates the educational value of visual aids to learning. He reports that merely selecting pictures and making them available to teachers and students is not sufficient. "The problem, then, is to develop and to train students to analyze or to 'read' a picture rather than to merely survey it". This discussion is full of timely and practical suggestions.

Mrs. Pitcher's paper on the "Flashmeter as an aid to reading" reports the use of a special type of teaching device which makes a peculiar demand on visual perception. This is a discussion of a pioneer investigation. Teachers and administrators will find something to think about which may be of great assistance to them in solving their own school problems.

Superintendent Gibson's discussion of "Illumination as a factor in reading the printed word symbol", will be worth reading and re-reading again and again. Too many educators have disregarded the serious problems with providing proper illumination. The issues involved are not simple and they will not be solved without the assistance of schoolroom teachers. The new emphasis on the health and aesthetic aspects of lighting as well as upon the seeing aspect will be found stimulating.

Communication in general and speech in a special phase of that process are discussed in two papers. The field of semantics is much before the public these days. Mr. Donald McLean pertinently discusses some semantic aspects of communication. He points out that "two potatoes cannot communicate". The reason ascribed for this condition is "they have no nervous system". This indicates that he finds the problems of cognition and communication explicable very largely in terms of neural functions. He says, "It is because of the cortex that we have the power to speak and communicate with other humans by means of words and other symbols". He points out that man's is "ninety-nine plus percent a symbolic type of life". Hence, "if we are mal-adjusted it is because we either have wrong symbols or are interpreting accurate symbols incorrectly". Therein lies a challenge for development of ability to read both in the field of symbolic representation and in the field of things.

Dr. Davis indicates a particularized program of speech education. She emphasizes the interrelatedness of speech with bodily activity, sound, word usage, and language technique for the expression of meaning. This is illustrated by means of "the five finger rules of speaking". "Just a thumb of the hand is helpless to work alone, so meaning is useless unless it is communicated by action, voice, diction, and grammar".

The specialized psychological and educational interpretations of reading printed word symbols specifically, but of some phases of a more extended conception of reading also are discussed by Dr. Perkins and by Mrs. Pierce, Dr. Sullivan, Miss Rogers, and Miss Shrodes. Dr. Perkins experiences inability to distinguish fundamentally between "reading" as a process and "learning" as a process. He points out that "reading problem children" change status in the vacation periods. They then "read", i.e., "observe", "evaluate", and "respond appropriately to the stimuli of the city, country, beach, and mountain". After reviewing studies of the processes of developing and of learning, he concludes that the teacher must know and understand the child's developmental trends and goals. This is properly termed "reading the child". This stimulating article presents an aspect of the reading program which has been too

frequently overlooked. It expresses basic conceptions of the purpose and procedures of the Claremont conference series.

Mrs. Pierce, in presenting "a developmental program of reading", illustrates the application of many of the psychological principles which Dr. Perkins presents. These two articles supplement each other so well that they should be read together.

Dr. Sullivan reporting on "Some aspects of the reading problem" reasserts that consideration must be given "the conditions favorable to learning and the fundamental processes of learning". She illustrates how to discover variations between mental development and educational development and indicates how adaptive practices may be set up in those regards. The reports of investigations of reading achievement in high school classes will be of interest.

Miss Roger's report on "Problems, procedures, and materials in the reading program of Los Angeles Secondary Schools "describes the concern of a large city system with regard to the reading problem. It contains much in the way of information on materials and procedures which will be of use to other students of that problem.

Miss Shrodes' discussion of "Reading to extend experiences" illustrates that "It is possible through his reading to make the young student aware of himself and his immediate world as part of a larger pattern in whose apparent confusion he must find principles of coherence if he is to live with poise and sanity in the chaotic present and the problematic future". That, admittedly is a very large order, but those who listened to the presentation of Miss Shrodes' ideas felt that she had gone a long way in demonstrating that it can be done. The article is recorded here for the benefit of those who were at that time playing the part of "the little man who wasn't there".

Mr. Fox raises pertinent questions which must be answered if these reading problems are to be solved. Directors of curricular studies will feel a kindred interest for the questions he asks.

The variety of approaches to the understanding of reading and the many and varied illustrations of the applications of the process are evidences of the Claremont conferences' idea. We are proud to present this sixth yearbook to our friends for their consideration. A better program for reading instruction can be devised. The authors of these many articles have suggested some of the issues which are involved and they have indicated their ideas with regard to possible solutions. The next step should come from the "readers".

READING ART

Mrs. Jean Goodwin Ames, Scripps College and Claremont Colleges

It is my purpose to describe in a general way the content and significance of two of the major fields of the visual fine arts and their attendant minor arts; to indicate certain stumbling blocks or barriers which bar the way to a full or even a partial participation in the reading of these arts; to suggest the direction which art education is taking in order to develop to its fullest extent everyone's ability to read the meaning of art; and to comment on certain tendencies in the evaluation of art in modern society.

Art, as it is defined in first preference by Webster is: Skill in performance acquired by experience, study, or observation.

What constitutes a skilled performance, of course, varies with the requirements of the performance. There is a certain type of performance which is a part of the large conception of art and which is often exclusively called art. A work of art in this specific sense is a man-made form or order which is intrinsically satisfying and which is expressive of man's emotional nature. Skill that does not further these two constant factors is entirely extraneous, no matter how it may add superficial polish to the performance.

A minor art is distinguishable from a fine art only in its possession, in a lesser degree, of that expressive quality. The only line of demarcation between the major and the minor is a relative one. Generally, but not always, the utilitarian forms of art have not possessed the degree of human interpretation that have the so-called fine arts, and, therefore, are generally called minor arts.

The major fine-arts are sculpture, painting, architecture, dancing, music, and literature. It will be sufficient for my purpose to treat only the arts of sculpture and painting, and their attendant minor arts. Together these are called the plastic and graphic arts.

Sculpture and painting have one dominant characteristic. They are fundamentally representative arts, achieving their artistic expression through the abstract treatment of the representational subject matter. Their attendant minor arts have been noted to lack in expressive, or fine art quality, in the degree that they depart from this interpretative character toward decorative design and functional design.

The structural form of sculpture and painting is variously called design, composition, structure, abstract order, aesthetic order, formal order, design structure, art structure, and the like.

The following view of art structure or design is presented, not as an original classification, but as one which seems simple and basic, and whose ramifications will take their logical place. It is a useful

aesthetic category to be kept in mind by the student who would read art in the fullest measure, or experiment with creative art in the fullest aesthetic form. This language of design, or structure (or any other term which means the same) is logical and simple in essence, but it tends to become complicated and confounding in its many ramifications.

There are six visual elements in the aesthetic language. They are line, area, tone, form (either actual as in sculpture, or illusionary as in painting), color, and texture. The elements are not given in order of their importance; their importance varies in each work of art. Consider, for instance, the use of color in sculpture and painting. Color is generally not used at all in sculpture.

The elements of art are mutually dependent to some degree. Line usually describes boundaries of area. Area in the graphic arts cannot exist without either line or tone. Form in the graphic and plastic cannot exist without the accompaniment of either line or tone. Color, tone, and texture are dependent upon the use of area, and sometimes of form.

Certain periods and nationalities have given emphasis to certain elements, often excluding others that were essential to other times or peoples. The same is true of artists today. One works with major emphasis on line, another on tonal patterns, another on form, and so on.

There are six major principles, and numerous minor ones, which act upon the elements, causing them to take form or order. These major principles are rhythm, balance, proportion, transition, variety, and accent. The major principles have had pretty general use, but, as in the case of the elements, one or more have had a particular interpretation in the hands of different artists, periods, or peoples.

The principle of rhythm is one of unified movement. Fundamental types of rhythmic movement are the straight direction and the curved. These may be sub-divided into continuous and broken movements. These in turn may be branched into the simple group movements, such as radiating, parallel, alternating, spiral, winding, interlacing, zig-zig, and the angular types. These group movements in turn may become more complex; so that a rhythm may contain both curved and straight line movements, also the broken and the continuous, in unending variety.

The principle of balance is one of equilibrium or the sense of tension and weight, which is obtained by a unified distribution of the properties of each art element within a composition. Its types are symmetrical and assymetrical.

Proportion, a principle akin to that of balance, is the ratio or quantitative measure between the extreme properties of each art element. An example of the working of the principle of proportion is found in color harmony. For example, in two designs using the same colors, different types of harmony may be produced by a change in the proportion of the colors.

The principle of accent or emphasis creates centers of focal interest on a subordinated structure through the use of contrast, isolation, or change. One receives a pleasant shock from the juxtaposition of black and white, particularly if those black and white areas are on a ground of greyer tones.

The artist knows that the focal interest is stronger in the excitement of sudden change from a ground of low intensity color to a spot of high intensity color, particularly if the spot is opposite in warmth or coldness to that of the ground color.

The principle of emphasis also brings about the domination and subordination, in proper sequence, of all the factors in a design.

The principle of transition unifies contrasting aspects of any art element by a bridgework or steps between these extremes. Linear movements, colors or shapes, textures or forms, which are so opposite each other that they seem to be unrelated, and are consequently unpleasant, are often united by logical transition steps. Thus in a work of art where extreme colors, such as orange and blue, are used, it is possible to achieve transition between the two with the help of steps of intermediary colors; so one proceeds from blue to green, to yellow, to orange. One also may achieve transition between orange and blue by steps which are mixtures of the two.

The principle of variety works on the other principles in order to avoid monotony in a composition and to increase interest. It may imply the varied use of one principle on one element: an example of this simplest type of variation is the use of more than one type of simple line movement in a linear design. Variety may bring about the action of several principles working upon several elements; thus a composition that has rhythm of line, good proportion of area and color, balance of color, transition of tone, and accent of tone and color may be more interesting than if it were merely developed in rhythmic and accented lines.

Complex art structures like complex nature structures are eternally fascinating to one who understands them. Complexity does not, however, invite immediate complete reading.

The minor principles are all important, but are generally called minor because they are combinations or specific amplifications of the other principles. Such a minor principle is sequence, which means <u>rhythmic</u> steps of such <u>proportion</u> that the steps give a certain order of movement from one place in the design to another, often becoming a <u>transition</u> from one extreme to another.

The elements and the principles of art need not all be used in any one work of art-- in fact, all are found in only the most complex art forms.

There are certain stumbling blocks and barriers which prevent the

observer from achieving a complete or even a partial reading of a work of art. The first of these is the confusion in terms and definitions, and the distortion of concepts which pertain to the structural basis of art. Much of this confusion results from the many shades of meaning of many English words. Such words need qualifying adjectives to give them correct meaning, and when these qualifying adjectives are left off, the layman is often confused. Consider the word "form". "Form" may mean to an artist variously, "structure", "style", or "manner", or "mass." Consider the word "abstraction". It may mean design or art structure in general, or a particular type of modern painting, a work of art without naturalistic representation. "Aesthetics" may refer to a philosophical concept of beauty in art to one person, and to another may simply refer to art structure. "Design" has been used to mean imposed decoration, and is also used to mean the complete art structure.

Musicians have clarified their terms, definition, and concepts of the makeup of structural form— have reduced them to a common understanding; so that anyone of average capacity may comprehend the fundamentals of music form or order. Painters and sculptors, on the other hand, have generally not been willing to accept a broad and inclusive view of design or to give all its parts their proper recognition or definition. The classification and definitions of the elements and principles that have been presented here is not admitted by a good many artists.

The reasons for this confusion of terminology and design concepts are three: In order to create the expressive quality, artists have found it best to <u>feel</u>, that is, to work unconsciously, rather than consciously, with the business of building design. This unconscious approach is so important during the creative act that there is often a reluctance to analyse or discuss art structure at any time. Because many artists refuse to think or talk logically about the structural aspects of a work of art, the layman and student have been so confused that they have been aware of none but the most obvious phases of design; and so have been blinded to the full significance of art.

The satisfaction resulting from reading the structure of art is both mental and emotional. Although the artist may prefer to use this mental approach unconsciously, so as not to hinder the emotional expression, the layman and student generally need to facilitate their complete reading of art, a clear understanding of the mental nature of art structure. The artist's attitude has often led the layman (and the artist, too) to a denial of the mental factor, and an ignorance of formal order. He puts the whole art act down to an emotional, unreasonable, work of mystery and magic.

Secondly, painters and sculptors in recent times have more often than not been trained in this inarticulate, unconscious attitude toward the aesthetic order. Each group, and even each individual, has in his search for the "original" expression happened onto some aesthetic means from the design category which served his purpose and, generally, ignored the broad concept of design to emphasize the part he happened to find.

Critics, following this approach, have thrown out propaganda that is as convincing to the novice as it is biased. One hears a certain type of "strong opposing rhythm and contrasting tonal pattern" lauded as paramount to fine structure. While this criterion may be justified for a particular type of expression, if one judges all works of art from this biased viewpoint, one may disdain to look with any sympathy on a work of art whose distinguishing element is its subtle, curvilinear rhythms, its lost edged tonal areas, its delicate harmony of color. To a person whose visual taste is keyed up to glowing color, a prejudice might be formed so that he could not appreciate ancient Chinese monochromatic painting. To one who valued equally the six elements and principles of art form, each fine manifestation in the use of any or all elements would give pleasure.

The third reason for confusion regarding concepts of design and design terminology is the fact that too many charlatan artists and quack critics misuse the terminology of design as a veritable jargon to justify a work which is decidedly weak in design. I have in mind certain so-called abstractions which, although a hodge-podge of unrelated areas, lines, and colors, have been lauded by a misguided critic as "perfection of formal order".

The second barrier to comprehensive reading of the arts of painting and sculpture is concerned with the representative subject matter through which design must function to bring about the human expressive quality.

Representation, if valued alone, becomes an obstruction beyond which it is almost impossible to enter into the rich realm of aesthetic experience and understanding.

Subject matter in the graphic and plastic media has generally taken the visually representative form. In some periods, it is true, the representative has been reduced to symbols, while at other times, generally at the close of a cultural period, representation has come close to the natural.

It has been observed that persons who are steeped in the symbolic art forms cannot well interpret the art forms which are presented in naturalistic terms; likewise, those who enjoy naturalistic subject matter cannot understand the symbolic.

Not so long ago a revolt was instigated against subject matter itself. The abstractionists, as the rebels are called, claimed that art had but a single nature, that of the abstract order: claimed that order, itself, produced the emotional expression without acting upon subject matter. A little perspective of time, however, has shown the great contribution of the abstractionists to be that of evaluating and re-emphasizing art structure in an art world which was satiated with an overdose of a certain type of expressionless, naturalistic representation.

The so-called pure abstractions have resolved themselves into fine, formal exercises and are intrinsically satisfying as such, but are cold,

removed from the emotional interpretative plane. Some abstractions gained their complete function as works of art by adopting new representative symbols, such as the provocative forms of Juan Miro and Picasso. Others used subject matter, but represented it in a new distorted manner.

To return again to the consideration of the nature of art, it will be noted that subject matter representation-- whether naturalistic distorted or symbolic-- must be expressively interpreted in a form which is intrinsically satisfying in itself.

If a work of art were viewed in this sense, half the obstruction would be removed for those who cannot read art for examining the extraneous aspects of its subject matter. Those who demand camera vision of the artist do not consider the aesthetic form in which the subject is carried, and without which the work is not a work of art at all-- but a mere record or a low form of illustration.

The form of art-- its order, its abstract nature, its design,--call it what you will,-- is the aesthetic media which must be comprehended both for its emotional and mental value, in order that one may fully interpret a work of plastic or graphic art.

The third stumbling block to more complete reading of art is the idea that nature is the greatest work of art and that man can do no better than to copy it faithfully. This idea was advanced by such a savant as Plato, and has always been a popular one to the lay mind. Color photography is Plato's idea of great art come true, for man could never delineate nature in its complex aspect.

Nature, without doubt, contains aesthetic order, but it has no limits, no boundary. No one can say at a given time where a sunset stops. Each art aspect of nature is dependent on other aspects; so that to select one phase, one piece, is to select something which lacks a whole and complete aesthetic order. The observer of nature, as well as the artist, selects and arranges in his mind and imagination the aesthetic elements which satisfy him. He creates-- without tangible form. The artist goes one step farther to give tangible from to the creative impulse. In so doing he also adds the secondrequisite of a work of art, the expressive human experience which is not found in nature.

Differing concepts of the beautiful and the ugly, and the idea that a work of art must be beautiful to be art, constitute the fourth barrier to art reading.

Beauty is a philosophical aesthetic concept which is relative and variable.

It is quite true that a work of art may be intrinsically satisfying as an ordered design and still offend one's conception of the beautiful or the conception of the beautiful which is currently held. Such a work of art still may be truly interpretative of human experience. The one who

reads art most ably will be able to gain partial aesthetic experience from such a work of art and understand why he is not able or willing to admit further experience.

An example of such a work of art and such an observer is the civilized modern contemplating the work of art of an African savage. The design is admired. The strong and expressive use of the design elements and principles is stimulating. But the expression is generally repugnant to use in its barbarous interpretation of the sex feelings. The modern man although he shares these primitive experiences with the savage, does not feel them with the same significance as does the savage; and so cannot completely react to the expression of the African, even if he so desired.

Beauty, an elastic term, is sometimes used to mean the satisfying formal order of a work of art, aside from its interpretative function. The idea of formal beauty is one not commonly held by the layman; therefore to us the term "beautiful" in referring to a work of art whose formal order is beautiful and whose interpretation is generally admitted to be ugly, is simply to add to the general lay misunderstanding of the graphic and plastic arts.

A fifth barrier to the reading of art is the unfamiliar emotional expression. Emotional experiences which were a part of other cultures and times, but not of our own, are never wholly re-experienced by the modern observer. The modern can never fully experience the profound mystic expression of the Byzantine mosaic, having never been a part of that experience. It is, however, possibly of greater value to half-way read a profound work of art which is inevitably removed from us in time and feeling than to wholly read a contemporary work of shallow expression.

The sixth stumbling block in the way of reading art has been a prejudice in the mind of the layman against fine art because of its apparent uselessness in daily living. This prejudice has been expressed in the term " a frill," which was used to pry art out of the schools, during the depression-- and which is still used by some "practical" minded people.

The idea that the graphic and plastic arts belong to the dilletante has kept men in general, and many women from studying such a so-called superficial and sissy subject. Some phases of the fine arts have no more practical value than to give pleasure. It is obvious, however, that art enters every field of endeavor that takes visual form.

A seventh barrier to an understanding of graphic and plastic art is the super-abundance of false art or bad design that exists in modern advertising and industrial art. The effect is to dull the sensitivity of the spectator who might be led to enjoy genuine art.

Superfluous ornament and decoration that existed during the Victorian era and which still persist today in the modernistic "ornament", have tended to pervert the layman's taste so that he cannot appreciate a design

of integrity.

Certain functional objects, whose form has been distorted and disguised to hide their function, have led the layman to believe that disguising in itself is a purpose of art. The modern conception that the finest design grows out of the functional demands is much more healthy and has more educational value.

An eighth barrier to a reading of art is the misconception of the meaning of skill in the mind of the observer. The craft, technique, or skill which is necessary to bring the work of art into a tangible entity is quite often worshipped for its own sake. When this attitude of mind controls the artist, virtuosity is apt to be much in evidence. Brilliant paint strokes, or polished surfaces may camouflage a disorganized and unexpressive work.

Because skill is a word so often put to service for manual dexterity, an empty facility is often justified according to Webster's definition of art--- that art is skill in performance. Thus a misguided observer may look only for showy exterior or polish, and not finding it, condemn a work of real integrity without really seeing it.

The true meaning of skill, of course, is the only one which meets with all the constant requirements of a performance.

It is generally granted that everyone can be educated to a better reading of art. Although some people are partially, and some totally color-blind, it is likely that everyone possesses some capacity for aesthetic response. That capacity is evident in primitive peoples, and in small children, whose fine use of design in interpretation of symbolic and representative subject matter is amazing.

The potentiality has remained latent in many laymen, blanketed by false popular concepts of what constitutes a work of art; so that, actually, many savages, barbarians, primitives are closer to this powerful emotive language, know how to read it and to use it better than do most of our contemporaries.

However innate is the capacity for aesthetic response, it must be used and trained to become a functioning part of living-- as does every other capacity which man possesses. That is the reason for art education.

The person with a limited art education will perhaps respond to the type of design which is in the fashionable manner of the day, or to an accepted classic style. He will respond, possibly, to an aesthetic order which has become thoroughly familiar through the last fifty years of insistent usage, and to those phases of Western art which have been painstakingly discussed and lauded by Western critics.

He will probably wear blinders to many great Oriental phases of aesthetic expression, brush aside the primitives, never see the tremendous,

ever-new potentiality coming to life in the modern child's expression-- only to be snuffed out by weight of false mass evaluation.

The truly educated person knows the aesthetic language to be one of visual elements, and visual principles. Because he is familiar with these and the way they have been used to interpret visual subject matter, he responds to a work of art in the fullest degree that his mental and emotional endowment allows. He responds in a two-fold sense. One response is the satisfaction, mental and emotional, that a fine structure or design stimulates. The other response is the reaction in some degree to the interpretation of life found in a work of art, whether it be that of a savage, a civilized man, an oriental, an occidental, or a work of any race or of any historic time.

The best means yet devised to rouse response to visual order is to create in terms of visual order-- and to begin young.

It is advisable that the student be led in creative work by one who has a first-hand working knowledge of design.

It is not necessary that all people be herded into painting, sculpture, and drawing. There are many minor arts in this creative field which are not necessarily representative, and whose expressive or interpretive character is lesser in degree than those commonly called the fine arts. They generally do not stand alone as separate entities as do the fine arts, but owe their existence to a utilitarian purpose or to a decorative one.

Some of these minor arts do not require the specific manual dexterity (such as the arts of interior decoration, flower arrangement and landscape gardening). Other minor arts require different talents, such as the various crafts, and industrial design. Because the selection and arrangement arts are so common in daily living, it is not difficult to gain the interest of a student in one of these, if not in the more expressive forms of art.

All of these visual arts have one thing in common: the use of the elements and principles of design. Because of this common art structure, the one who has satisfactorily used that structure in creating a visual form has gone a long way toward experiencing satisfaction in any well-designed work of art.

A second means of quickening response to art is through the art of criticism. Criticism-- the analysis and evaluation of the art form and its expressive content is an intellectual exercise which is challenging to the student and which brings about a quickening response to art. Criticism in exact aesthetic terms reveals the integrity of the well-ordered form and unmasks the inconsistant, the poorly organized; distinguishes the visual record from the visual interpretation. True criticism is recreative as well as judicial.

The art critic who writes in magazine, newspaper, or book, or who

lectures, should consider himself one of the formative factors of the layman's approach to art. A good critic should never permit himself the luxury of voicing personal likes or dislikes, whims, or thoughtless inconsistancies. There are a few fine critics, whether working with a school or not, who value their position as educators and who do much in the way of removing the stumbling blocks and barriers that lie in the way of effective art reading. A good art teacher is a good critic who teaches others to evaluate soundly.

The third means of widening response to art is to expose the student to the well-designed. Familiarity with good art makes one more sensitive to it.

Educational agencies, not only the school, but clubs and associations for civic betterment, have helped and could do more to remove at least one of the stumbling blocks to better lay reaction to art. A certain amount of offensive advertising and community visual disfigurement could be removed and is being removed by such progressive associations. To remove civic eye-sores is to remove blinders that make the layman insensitive to good design.

These same associations have become an educational medium in stimulating the citizen to take a part in better city planning, better landscaping of yards and parks and gardens.

The fourth means of bringing about better reading or art is that the teacher, school, and state so value and acknowledge certain social significances of art that the layman will be more alert to it. The social function of the reading of fine arts is that of bringing about a better understanding of man's complete nature, a better understanding between nations and races of today, and a better interpretation of all times and cultures that are modern man's heritage.

The visual world of art left by man gives an interpretation of his history that cannot be entirely duplicated in the written word. A familiarity with this larger social significance of art would quicken the insight of the student in his approach to all graphic and plastic art.

Fine order in the selective arts, such as home decoration and costume, can be shown in education to have a psychological effect on personality and daily living.

The state has done much to emphasize the social function of the fine and minor plastic and graphic arts in the recent Federal sponsored art projects. Fine art was given a place in public buildings as mural decoration and architectural sculpture. Fine art in the free forms of painting and sculpture was also produced for the public enjoyment in buildings and parks.

Because this was such a sudden experiment and was carried on on such a vast scale, much of this art, it is true, is of questionable

value. Regardless of the defects of the plan, the idea is healthy, democratic, and educational. As a result of the movement, innumerable communities have been awakened to the desirability of art in public buildings, and so have continued to demand and obtain art after federal support was withdrawn.

The relation between a fine design and better functionalism in the industrial arts should be continually pointed out.

An example of such a relationship is that of the extreme functionalism in the design of the airplane. The function dictated the design. The design, became one of visual order and integrity because there were no false demands placed upon it, such as extraneous decoration.

The speed in the development in integrity of the airplane design was far greater than the slow evolution of the automobile. The latter was held back by the idea and form of its predecessor, the horse and buggy. As the memory of the horse and buggy faded from the mind of the public, it was possible to admit the idea of streamlining and other necessary design changes coinciding with mechanical changes which had been advanced by engineer designers for years.

This example of the coinciding of function and design is only one of those which are a part of daily living. A realization of such social implication of art is bound to gain the interest of the layman in art, and such an interest is always the first step toward true art interpretation.

There is a tendency in some modern schools to revaluate the major and minor visual arts, giving first importance to those arts whose social function is most obvious, that is, most in demand or most utilitarian or more integrated with daily living.

It has been pointed out that a greater number of people may be given a better understanding of art if they are introduced to it as a social contribution in its most obvious manifestation- that of the well-designed industrial art. It is undeniable that their lives and that of the state would be enriched and better ordered in a visual sense if this could be accomplished. It is even probable that this socializing tendency does not come from art schools but is the result of an inarticulate demand of the people and the state of civilization in which we find ourselves.

It is possible that the free picture and sculpture forms no longer suit a scientific age which has a bent toward efficiency, extreme usefulness, and economy.

If there is an ascending human feeling in such an age, perhaps the old free fine art forms are not fitting. Perhaps great human feeling will be next brought to climax in so-called minor arts that will rise to become the vehicles of greatest form and expression, as has occurred when, at rare times, utilitarian function and expression blended.

Architecture, which has not been touched upon in this lecture, has not had its fine art aspect diminished by useful function. In fact, one of its distinguishing characteristics is its peculiar social function.

Other examples in the plastic and graphic arts where utilitarian dependence and fine art quality coincide are the Mohammedan art forms of Persia: the pottery decoration, the arabesque designs on rugs and wall tile decoration, and the manuscript decoration and illustration.

It is certain that a greater part of the people may be brought to a general appreciation of the design function of visual arts as a result of this tendency, whether the art rises or does not rise to a profound human expression.

The danger of this revaluation of visual art forms is that a new barrier to profound art reading is even now developing in certain commercial art schools and circles. This is a new prejudice which as it exalts the utilitarian forms, condemns others which like music are free from a utilitarian aspect. Regardless of this tendency to deny the free art forms in painting and sculpture, there will be educators and students of art who will react with sensitive interpretation to the profound works of art of all ages.

There is on the Pomona campus a great work of art-- the Orozco mural in the Refectory of Frary Hall. It is a visual order of undeniable integrity, and it is undeniably an intense expression of human emotion. Few of its observers, however, are able to respond to the order and expression of the work-- in fact, most of them react against the painting, unable to surmount the barriers that block the way to a full reading of the mural. One objection to the mural is justified on aesthetic grounds. This strong, modern mural does not meet the requirements in design or feeling that should be in keeping with a revival period architectural interior.

As a dining hall decoration the mural fails in its functional relation to the room, that of creating a peaceful and pleasant atmosphere conducive to digestion.

The other objections to the mural give evidence to the obvious barriers to art understanding.

Here we see the barrier which rises before many observers when a strong abstract order distorts natural representation, in this instance with strong angular shapes and rhythms. The barrier of a symbolism not always understood is evident in the characters of the side panels. The barrier of a differing concept of beauty is present when the nude giant and the distorted figures appear unrefined and ugly. Another barrier is evident in some having been conditioned to different types of visual order, such as more mellow color harmony, more subtle linear movement in mural art. There is also the barrier of the unfamiliar or the unadmitted passionate emotion.

Here, before our eyes is a work of art which, even though its faults are admitted, is still one of the most genuine and powerful expressions of a modern man. To one who can surmount the barriers and react to it, it represents in feeling as well as in story, man's universal longing, torture and struggle. One may also read an intensity of feeling which could teach us much about the Mexican people.

To read art in a broad manner is to read the cultures of all time. Art is a visible symbol, giving life eternal to the vanished, linking man to man and age to age.

ON READING THE LANGUAGE OF ART

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The language of art cannot be understood until we take the trouble to learn that language. Picasso says one thing to the illiterate in art; something else to the attentive and resourceful student.

In a gallery where Picassos are hanging there still is to be heard, after three decades of his recognized importance, considerable wise-cracking and ribald laughter.

I have had friends who laughed similarly at a page of Chinese literature, finding all sorts of funny things to say about the shapes of Chinese letters and hooking them up with John Chinaman, the laundryman down the street, and his whining sing-song. The page, to those who can read, may be an exquisite poem or an elegant expression of Oriental philosophy. To my wise-cracking and ignorant friends it suggests slant eyes, pig tails, chop sticks, and the score of mystic ingredients that go into chop suey.

So it is with visitors to a Picasso exhibition. Misplaced eyes and ears in a Cubistic picture, elongated necks, fantastic lines and planes that have no resemblance to anything in a Bouguereau nude or a Corot tree or a camera study of President Roosevelt lend themselves readily to our twittering wit.

Let's examine the famous and notorious "Guernica", Picasso's huge canvas inspired by the wanton bombing from the air of an inoffensive, unfortified, pastoral mountain village in the north of war-torn Spain.

"Guernica", even to the initiated in the lore of Picasso and the extreme "Modernists" was startling and unintelligible at first glimpse. Wise-cracks died feebly in the cheeks of the onlookers ignorant in the language of art and happy in their ignorance, so macabre was the general effect. The picture made them angry instead. It was still a practical joke, but a grim one, going beyond the point where such things cease to be funny. Picasso was still the grand-stander, seeking to astound at whatever cost. His deluded followers would give another irritating exhibition of claiming profundity for impudent and outrageous nonsense. The place for Picasso is behind bars, where he will learn to cease annoying right-thinking people--- to quit dragging the noble art of painting through mud and slime. This new esoteric riddle of his is just more psychological balderdash.

But in crowds in front of "Guernica" there is occasionally a savant who can read the language of Picasso just as an Oriental scholar can read a page of Chinese philosophy or an Egyptologist the Rosetta Stone--- maybe haltingly and hesitatingly, maybe even misconstruing sometimes a phrase, but grasping the general significance.

Bulliet 2

These savants see something grand and solemn and intensely earnest and indignant in "Guernica". Picasso, profound student of the Primitive in many lands and through many historical periods, assembled the most powerful symbols mankind has devised to express the horrors of war---horses driven hysterically insane by fear and pain; mangled human heads, arms and legs, only treated as shattered sculpture instead of flesh raw and bleeding; faces distorted in grimacing agony, fingers spread spasmodically; the bull of the Spanish ring, with elements in him of the Greek Minotaur and the Egyptian Apis; lamps, oil and electric, together with other sources of fitful flames; instruments of Medieval torture-- all giving distorted physical expression to the twisted psychology of the fiendish gods of war.

From a multitude of these symbols, after making some sixty individual drawings, Picasso assembled fragments, and hurled them in wrath at the world as "Guernica."

"This mural of the Spanish Civil War", reports Dr. S. Giedon, one of these literate savants, in his new book, "Space,Time and Architecture", "seems to be the first historical painting since the beginning of the Renaissance and the work of Paolo Uccello. It is the tragedy of a country distilled to its full strength by an artist able to transmute physical suffering and destruction into powerful symbols."

Dr. Giedion in making this estimate was not unaware, I am sure, of historical paintings like David's "Coronation of Napoleon", like Benjamin West's "Penn's Treaty with the Indians" and like "Washington Crossing the Delaware" and "Columbus at the Court of Queen Isabella."

These and their kind, in the presence of "Guernica", are to be relegated to the status of illustrations in the primer of the language of art.

"Guernica" is one example out of a multitude that could be singled out from the 25,000 years of art since the beginning in the scratchings of reindeer hunters in the caves of France and Spain.

Our own century, starting with the discovery by Maurice Vlaminck in a wine cellar in Paris in 1903 that Negro African sculpture was "art" as well as "ethnology", thereby sending French, German, and Italian artists scurrying through art history and into existing jungles for "motifs" for a new art renaissance, has been the most complicated and bewildering era in the history of the world for the studying and understanding of the language of art--- rather the many languages and multitudinous dialects.

I imagine around Babel, after the visitation of Jehovah, there were many, listening to the strange gibberishes all around them, who believed all their neighbors suddenly had gone mad. Each, however, was only trying to tell the others, in language he himself perfectly understood and perhaps faultlessly spoke, that cakes and coffee would be grand for tomorrow's breakfast.

The honest, inventive, and intelligent among our "Modern" painters and

sculptors, finding a "motif" in some ancient, esoteric, African, Asiatic or Oceanic art, built feverishly on that "motif", producing something odd, outlandish, not immediately intelligible---but to him significant.

"Fauvism", "Cubism", "Expressionism", "Surrealism" developed, with as many facets as there were original and inventive talents, each excitedly babbling around the base of the new art Babel.

I had a friend in Chicago who was thoroughly and eagerly conversant with everything new in music, which, like literature also, was striding along, though a bit laggard, behind the Parisian art developments. He thought the new art nonsense.

"It would be worth your while for your own satisfaction", I told him one day, as I wish to tell any of you now who have been neglectful, "to learn the language of Modern Art as you have learned the language of Stravinsky."

It is curious, I have found in several other instances of personal contact, that open-mindedness in one of the arts does not necessarily imply open-mindedness in another. Music and painting, for some reason I can't fathom, seem to be curiously antagonistic in this respect. The rebel in music is likely, as often as not, to prefer the traditional in painting, and the eager disciple of Picasso will stop with Beethoven.

"Modernism", then, is a Babel to the uninitiated. But art from time immemorial has spoken in many languages that must be studied and interpreted by the student of today. Pictures and sculpture are still talking in the "dead languages" of their time--- in languages analogous to Greek and Latin, to classic Hebrew, to the Egyptian of the kings before the Greek Pharaohs, and the degree of your understanding of art is dependent on your proficiency in its various languages and dialects.

The study is endless and humbling. The scholar, steeped in the lore of art, may smile at the blatant ignorance of the tyro turned loose among masterpieces. For, more than in any other field of learning or culture, the layman is bombastically vocal in an art gallery. He knows what he likes and dislikes with truculent assurance, and being free, white, and twenty-one, his opinion is as good as anybody's. He would scarcely so presume in realms of medicine, law, physics, chemistry, or astronomy.

But the art scholar has moments of sadness, too. He would extend the melancholy reverie of Faust to include his own experiences:

> Alas, I have philosophy,
> Medicine, jurisprudence, too,
> And, to my cost, theology,
> With ardent labor studied through,
> And here I stand, with all my lore,
> Poor fool, no wiser than before.

Bulliet 4

Moreover, to add to his difficulties, art is in a fluid state. Its symbols and expressions are constantly changing, subject to new uses, new interpretations, new understandings, new critical slants.

The potter who moulded and decorated the Grecian urn to which Keats addressed his ode, felt necessarily different about it--- and so did his contemporaries--- from the way we feel, having read Keats. He had not the perspective of 3,000 years to gaze through that Keats had. To him there was nothing quaint about his work. No melancholy of a long-dead civilization went into his creation. He was working on a utilitarian object for himself or a neighbor--- maybe it was even commissioned. The events of the hum-drum everyday were racing through his mind. Hunger--maybe the few pennies he would get for this urn would feed, for a day, himself, his wife, his children. Love-- maybe this would be a gift to his bride; maybe she had jilted him, and he would show her he could make a better urn than anybody in all Greece. Maybe he was just a skilled artisan, having no feeling of romance for what he was doing, just following a pattern that was stock in trade. Maybe his neighbors knew all this, and assessed the finished urn for what it was worth commercially and dispassionately. Maybe, after a while, it was sent to the attic or thrown on the town dump.

But Keats has spoken, has interpreted the language of this urn (and all other Grecian urns) to read to us like this:

> Fair youth, beneath the trees, thou canst not leave
> Thy song, nor ever can those trees be bare;
> Bold Lover, never, never canst thou kiss
> Though winning near the goal--yet, do not grieve;
> She cannot fade, though thou hast not thy bliss,
> Forever wilt thou love, and she be fair!

Let's survey rapidly the history of the earliest conscious work of "art" devised by man--- the Swastika, once so universally cherished, but in its present avatar the most sinister symbol in the world today, overshadowing the cross of the Christians and the scimitar of the Mohammedans.

In 1896, when Hitler was a petulant and sullen boy, the Smithsonian Institution at Washington City published a learned investigation, in hundreds of pages, by its Curator of Anthropology, Thomas Wilson, entitled "The Swastika: The Earliest Known Symbol." After the rise of Hitler, a British clergyman, the Rev. Norman Walker, published in 1939 a supplementary pamphlet, "Real History of the Swastika", based on Mr. Wilson's book and bringing the investigation down to date. From these two works, I extract my data.

The Swastika began before history, and is designated the first "invented" symbol. The circle was known from the dawn of human intelligence in the shape of the sun and the moon and the trunks of trees. The cross occurred accidentally when a dead stick fell across another.

But the Swastika, with its symmetrical arms extending from the four

ends of the crossed sticks in ordered succession was an artificial evolution. Rudyard Kipling, learned in the lore of India and an attentive student of the Swastika even before Englishmen had to deal with Hitler, speculated that the arms may have been suggested by the accidental crossing of sticks with leaves on them.

However, it was evolved, the Swastika appears in its present perfection of form when the curtain arises on history, and is already speaking its piece.

Partaking of the nature of both the cross and the circle--- for it is animated to the eye, suggesting rotation--- it was an ultra-sacred symbol. China, Tibet, India, Egypt, Troy, Germany, Scandinavia, France, and Britain all had it before written history began.

In India, where it occurs on the oldest Buddha medals and the medals of the Brahmins, and on the walls of Buddhist caverns and in the imprints of the feet of Buddha, it got approximately its present name, a combination of "su" meaning "well" and "asti" meaning "to be", with the suffix "ka" giving it the substantive form--- therefore, "well-being" or "good luck", and that has been approximately its symbolic meaning in most languages and climes.

In China it was called "wan" meaning "ten thousand" with "blessings" understood.

In many inscriptions and on many works of art it symbolizes, over vast areas and through many eras, nearly all the major gods. In India, so perfectly did it round out all conceptions of superior powers, it sometimes spelled in one rotation, Brahama, Vishnu, Siva,---Creator,Preserver, Destroyer.

Elsewhere it symbolized Zeus of the Greeks, Jupiter Tonans of the Romans, Thor of the Scandinavians, and various rain, sun, and fire gods, and gods of the lightning across Asia. It was interchangeable with the lotus sign in Egypt.

In an artificial language invented by the Empress Wu of China about 700 A.D. it was dignified as the highest of symbols. A simple circle was a star, a circle surrounding a Z was the moon, while the sun was symbolized by the Swastika enclosed in the circle. It persists in India today as a decorative symbol in both Buddhist and Brahmin art.

Hitler's use of the Swastika is evolutionary and not a sudden whim. The Swastika had existed for centuries in Germany, as well as in Scandinavia and England (and, curiously enough, among American Indians of our Southwest) as a good-luck sign on brooches, seals, rings, bracelets, and similar ornaments.

In 1806, F. Ludwig Jahn, "father of German gymnastics", adopted the Swastika as a badge for his youth organization in Prussia.

Bulliet 6

"In his day", relates the Rev. Mr. Walker, "the sign had just been unearthed in old German graves and he sought to inspire German youth, after the defeat of the Prussians by Napoleon at Jena, with the glory of the past".

Prof. Jahn sometimes interpolated a short line converting each of the four arms into an "F". The four "F's" stood for "Frisch, From, Frok, and Frei", or "fresh, pious, merry, free."

"Thus Jahn's gymnastic symbol", says Mr. Walker, "has become Hitler's political badge."

Hitler's use of the Swastika has changed, for a vast part of the world, the language of the Swastika. From "good luck" of the ancient Hindus, it has come to spell "bad luck". From "ten thousand blessings" of the Chinese it has come to spell "ten thousand curses". From a symbol of purity in ancient and medieval times it has become a symbol of outrage and brigandage. Not long ago, I was told by a seller of Indian curios in California that nobody wants to buy even the ancient pieces of Indian silver craft bearing the Swastika.

The language of the Swastika, with its myriad recurrences in ornamental art from ancient Troy to modern Berlin, must, therefore, be read in light of particular times and places. It does not mean the same in ancient footprints of Buddha that it means in modern heel prints of Hitler.

As in the case of Picasso's "Guernica", examples of the evolution of a symbol could be multiplied indefinitely. The cross, for one, might be traced through a variety of expressions, including the complete symbol of life, male and female, in the Egyptian Crux Ansata. Forms of writing, from the hieroglyphics of the Egyptians through modern Chinese characters have been evolved from pictorial symbols, becoming more and more abstract in physical outline and more and more generalized in meaning. European alphabets have come a long way from ancient pictorial art, and our various systems of shorthand aim to go a step further in the interest of more economy of line, angles and curves.

The language of pictorial art, naturalistic representations of people, places and objects that appear in the world of common experience, while easier to understand than "Guernica" and the Swastika and more universally acceptable to the observer, has nevertheless its dialects running into the myriads.

Only a brief examination of a few significant and, I hope, illuminating examples, can be attempted here.

The photograph speaks a language well nigh universal. But even here the emotional understanding varies with the experience of the observer. A naked black savage in an African jungle can recognize as a human being, akin to himself, the photograph of a white man fully clothed in European garb. But he may exalt him into a superman or a minor god, thereby understanding the "language" of the photograph quite differently from the intention of the "alphabet" of the camera that snapped it.

Bulliet 7

After you leave the camera, your difficulties with the realistic and naturalistic pictures grow more and more complicated.

Corot's trees, Cezanne's trees, Rembrandt's trees, and the jungle trees of the Douanier Rousseau speak to all beholders in varied dialects, subject to misunderstanding and misconstruction even by people of intelligence.

Many of us find tedious the dialect of Corot's trees that once thrilled American Civil War millionaires. Cezanne's trees still have the power to irritate people who grew up with landscapes that adorned Victorian walls. The exotic jungle trees of the Douanier Rousseau are not trees at all to many people who revel in the shade of the trees of the other Rousseau, Theodore the Barbizon.

The Chinese painted trees, too, but unless you understand the old Chinese approach to art you are almost bound to misunderstand. Herbert Read, English critic, in his bright little book, "The Meaning of Art", shorthands illuminatingly:

"It is sometimes said that the Chinese artist attempts to express in his work the harmony of the universe, and some such cosmic phraseology is necessary to describe his aim. In any case, the aim has nothing in common with the usual aim of Western art, which is to represent the particularities of natural appearances. The Chinese painter will, of course, paint representations of natural phenomena: he is famous for his landscapes, and they are the product of careful observation. But they are never merely the particular landscape and nothing more; behind the particular is the general-----

> a sense sublime
> Of something far more deeply interfused,
> Whose dwelling is the light of setting suns,
> And the round ocean, and the living air,
> And the blue sky and in the mind of man,
> A motion and a spirit that impels
> All thinking things, all objects of all thought,
> And rolls through all things.

Those lines of Wordsworth's express more nearly than anything in the whole range of Western culture the spirit of Eastern art. "

Painting and sculpture until comparatively recent times have been chiefly the mouthpieces of the gods of the various realms in which they flourished-- Asia, classic Greece and Rome, Medieval Europe, and Europe of the Italian Renaissance. They visualized the gods or the spirits of the sacred dead, and, in turn, spoke to the devotees at the shrine of a great man-made painting or work of sculpture in the name of the divine personage depicted.

In ancient Egypt, after the art of portraiture (or the symbolism of portraiture) had advanced to a certain stage, it was congealed by the

priesthood of the reigning caste, and thereafter all artists only repeated endlessly the forms that had been thus canonized. This practice went on for ages, some of the more extravagant authorities estimating the period at 10,000 years. The spell was broken by the advent of the Pharaohs of foreign blood, partly Greek, who liberalized the arts.

After Greece and Rome, there came into European art the Byzantine period, of close to 1,000 years duration, in which something of the same thing happened as in ancient Egypt, though with not quite the rigidity, in which the spirit of humanity was squeezed out of representations of the Holy Family and the Saints. The figure and the face of the Virgin were feminine---even beautiful--- and the Christ was a young male, but all suggestion of the dross of the flesh was eliminated and the inner soul exalted. The divine Personages were as abstract, so far as human emotions were concerned, as the haloes around their heads, and were as symbolic.

The Italian Renaissance put an end to all this, with human models--- ofttimes all too human--- being transferred to canvas with all their visible frailities, and called Madonnas. It was against this practice that Savonorola raged, and in his bonfires were tossed many nudes by conscience-stricken artists, including Botticelli. The Inquisition in Spain attempted to restore formulas to be observed in the painting of Madonnas, but with limited success.

Under priestly control, the images or painted likenesses of divinity, whether the Virgin in Medieval Italy or Venus in classic Rome, conveyed to the minds and the emotions of the devout the messages of orthodox theology. From the Italian Renaissance down, the multitudinous and varied Madonnas have often spoken individually to a certain extent, being bound up with the religious experiences, the varied morals and even the secular traditions of the unique communities they dominate. Esoteric literature is spotted with tales of freakish phenomena of behavior, with some local image of divinity playing a responsible part.

A famous story concerns the Madonna of Siena, painted by Duccio and carried through streets annually in procession during the early years of the fourteenth century. Then, in 1345, a peasant dug up in the suburbs an ancient Roman Venus, marvelous in her marble beauty. Siena set her up in the market place, and started paying her homage, neglecting the Queen of Heaven of Duccio. There came a plague, killing thousands. A political faction started riots that grew to the dignity of a civil war, with brother striking down brother. Enemies from without, taking advantage of these misfortunes, invaded the city, with the slaughter of more hundreds. Then, twelve years from the date of her elevation, the citizens of Siena met in the market place, tore down the pagan Venus, hammered her to bits, and restored the Madonna of Duccio. Troubles ceased, and Siena returned to its former serenity.

It is curious to watch the varying behavior of Spanish peasants when images of their various village saints are carried through the streets on that saint's day.

Bulliet 9

The images speak in different tongues, in peculiar and particular dialects.

With the Reformation in Germany and Western Europe, which frowned on "graven images" with the eyebrows of Moses, and with the French Revolution, which robbed religion of much of the personal contact between European peoples and their gods, art veered further and further toward the secular and the worldly, which had come in with the Italian Renaissance.

Today, when a painter or a sculptor essays a new Christ or a new Madonna, public interest in the work is likely to concern itself with admiration or oftener condemnation of the artist or this particular creation. I think the Christs of Jacob Epstein will never call many Christians to worship. They are admirable, but as devoid of religious emotionalism as the equally powerful portraits by Epstein of his contemporaries. The language these Christs speak is not the language myriads of worshippers in Gothic cathedrals heard spiritually from lips of images created when religious fervor ran as high in the artists as in the laymen.

Often the personality of the painter has spoken through his religious pieces. Giotto, painter of the epic of St. Francis of Assisi, and generally credited with making the first break from the Byzantine and ushering in the Renaissance, appeals to the intellect so skillfully that he is for our pagan generation after six centuries as truly as for his own generation universally devout. It may not be true that he crucified treacherously a male model he had engaged to pose for a Crucifixion, in order to observe accurately the phenomena of the death agony under those circumstances, but he does foreshadow our materialistic painters of today who know accurately their anatomy.

Far different is the effect of a painting by Fra Angelico. Even today we are caught and enmeshed in the spirit of exalted piety of this heavenly monk, who painted on his knees the Virgin and Jesus and who wept copiously and continuously while he worked on a mural of the Crucifixion.

Because our civilization is no longer religious-minded to a degree necessitating new religious expression on the part of our artists, each creative painter or sculptor tries to say something individual out of his own emotional nature or experience.

"What we really expect in a work of art", to quote again Herbert Read, "is a certain personal element--- we expect the artist to have, if not a distinguished mind, at least a distinguished sensibility. We expect him to reveal something to us that is original--- a unique and private vision of the world."

Mr. Read is speaking of Matisse--- who lives up to expectation. Perhaps, in this paper, I have stressed too much the "literary" appeal of pictures and statues--- have sought to give expression too positively to tangible meanings that even abstract works like "Guernica" and the Swastika can convey. There is, of course, a vast "intangible", where all is emotion, like the scent of flowers, the quintessence of music and of

Bulliet 10

poetry. But this "intangible" has no language--- it is to be experienced emotionally by the sensitive, to be dreamed of rather than talked about.

Sometimes the artist, like the poet, can combine in his work symbols that will build up deliberately this "intangible". Picasso's "Guernica" is a case in point. An easier case is Hogarth's famous painting called "Tail Piece".

"My next undertaking", said the aging Hogarth one night to a round table of friends, while the convivial glass was circulating, "shall be 'The End of All Things'."

So, the next day he began assembling everything he could find symbolizing the idea--- a broken bottle, an old broom worn to the stump, the butt end of an old musket, a cracked bell, a bow unstrung, a crown tumbled to pieces, towers in ruins, the sign-post of an old tavern called "The World's End" falling down, the moon on the wane, a geographical globe burning, a gibbet falling, Phoebus and his horses lying dead on a cloud, a ship wrecked, Father Time with his hour-glass and scythe broken, a tobacco pipe spilling ashes, a book of a play opened at the last page with "Exeunt Omnes", an empty purse, a statute in bankruptcy.

"So far, so good", said Hogarth, when he had put all this on canvas, "nothing remains but this", and taking a pencil he sketched in a resemblance of his own painter's palette broken.

"Finis!", he muttered. "The deed is done; all is over."

It was his last picture. A month later he died.

DEVELOPING VISUAL ABILITY FOR PROFICIENCY WITH READING

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Too often when we teachers think of seeing or of the reading act we think merely of the functioning of the eyes. But, actually the eye is merely the end organ of vision. It is a highly specialized piece of tissue containing the retina, and among other parts, a lens system for focusing light upon the retina. Light is the adequate stimulus for seeing; without light there would be no sight. If we stop for a moment and think about the visual process we readily recognize that vision is not a function of the eye, as such, but is a function of the brain. Objects in our field of regard may be said to emit stimuli which are picked up or received by the eye and are then relayed to the visual centers of the brain. There vision or visual perception takes place. Just how perception occurs is not known. But it is the perceptual act in which we as students of reading are really interested. There are certain visual skills and conditions which are known to affect perception. One of them is the ability to alter the focus of the eye mechanisms quickly and accurately in order to obtain a sharp, claar image on the retina. A second skill is the ability to make a good fixation with the two eyes. This consists of the ability to direct the visual axes of the two eyes to a common point of regard. A third skill is related to the others but it is described as the ability to maintain the fixation with efficiency for whatever period of time may be required for the task being performed. These skills are of utmost importance in most of the reading tasks which are performed through the visual sense.

For example, consider the requirements for quick and accurate focusing as one is driving an automobile. The new law authorizes a speed of fifty-five miles an hour. Driving at that rate one will need to have clear view of the road for considerable distance ahead. Suppose a pedestrian steps out in front of your car at a distance less than the established distance for which your eyes have been adapted. You must turn the blurred impression of the pedestrian into a clear impression within an interval almost too brief to measure. You are approaching him at a rate of almost a mile a minute or about eighty feet a second. Slow focusing ability may cause a major disaster (and probably does quite frequently) under such circumstances.

Poor fixation ability may result in double seeing. Such a condition inevitably causes blurred images and hinders perception. It takes time to discover which image it is that one should respond to. A similar situation, less disastrous, might occur on the playground in a game of baseball. If one of the players lacks the ability for quick,accurate focusing and fixating he may momentarily see two balls and miss "them" due to the resulting confusion.

We have said that vision is not of the eye but that it is of the brain. This leads to a corollary, viz.; that vision, or the image as we think of it, is in neither the eye nor the brain, but it is projected out

into space. So far as we know, the projection of images is dependent upon the size and shape of the ocular images and upon the position of the visual axes.

In reading printed word symbols these skills play a very important part. We require a mechanism capable of maintaining a proper focus while the eye is directed from one fixation to another along a line of print, and which is also capable of changing focus as the book or head is shifted. In order to do this a proper accommodative or focusing reserve is required.

In reading a line of print of average length, assuming the head and print to remain relatively motionless, there is probably no need for changing the focus. But there is a need for a constant shift in fixation from left to right, and this requires a high degree of coordination among the six pairs of extrinsic muscles controlling the movements of the two eyes. These saccadic or jumping movements from one fixation to another are the most frequently used eye movements in reading. They are very rapid and require only about ten percent of the reading time. The remainder is taken up by fixation pauses and regressive movements.

Most authorities are agreed that for visual stimuli to be adequate they must be stationary on the retina. Photographic studies of the eye movements during reading show that slow readers make more fixations and regressions(backward fixations) and longer fixations than do rapid readers. Apparently their eyes must remain fixed on a given stimulus longer than the eyes of more rapid readers in order for perception to take place. This may be likened to the photographic film of a camera, the more sensitive the film the shorter the exposure time. Experiments whereby words or other symbols are projected on a screen for fractions of a second show that individuals differ in their ability to perceive the symbols. Some perceive them in a shorter period of time, others perceive more symbols in the given period of time. Some report more of the symbols accurately with one eye than with both thus indicating some form of binocular incoordination. This condition is also found in reading the printed page. Some students are able to read better with one eye than with the other, or are able to read better with one eye than with both together. This test can easily be made by the teacher if she will cover one eye of the child,then the other, while he is reading. These results should also be compared with those obtained during the time he is reading in his customary manner.

Studies by Parkins and others have shown that imperfect fixations and inability to maintain a fixation correlate higher with poor reading ability than do any of the other so called visual defects. This lack of fixation ability or fixation disparity is quite often noticed at the beginning of a line of print. It seems that during the return sweep (the movement from end of one line to the beginning of the next) the eyes tend to over converge or under converge necessitating a readjustment in the fixation at the beginning of each new line. If this be the case it might be that longer lines of print would be more desirable, however Brant Clark reports that this fixation disparity increases with an in-

crease in the distance between the two fixation points, in this case between the end of one line and the beginning of the next.

We do know that these skills are sensory-motor skills and as such are subject to training. Recent experiments in this regard have shown that training results in an improvement of these visual skills with an accompanying improvement in reading ability. In fact, recent publications show that educators and psychologists as well as vision specialists are agreeing that development of these visual skills are dependent on training just as piano playing or typing is dependent upon training certain neuro-muscular patterns or as skating or dancing requires the development of certain other neuro-muscular patterns. It should be seen readily from these examples that this training is not muscular training, or exercise as it is sometimes spoken of, but a development of brain patterns to carry out this high degree of muscular coordination required in performing such acts. Those who object to visual training or orthptics as it is properly called, do so on the grounds that the eye muscles do not require exercising or that they are many times stronger than necessary to take care of eye movements adequately. Would those same objectors object to "finger-exercises" in typing or piano playing on the same grounds? Visual training is no more "eye-training" than finger movements are "finger-training" or arm movements "arm-training" as used in penmanship drills of practices. The process is much deeper and in no sense muscle training unless by the term we mean developing brain patterns to control and properly innervate certain neuro-muscular skills. In support of this Brant Clark points out that so called eye or muscle fatigue is in reality not a muscle fatigue at all but a fatiguing of the central processes.

Symptoms of a Faulty Functioning Visual Mechanism

There are many symptoms by which inadequate visual skills may be recognized, albeit one must learn to read them just as one would learn to read any other symbol or stimulus.

Lack of attention during reading may indicate visual fatigue due to faulty functioning visual mechanism. A covering of one eye or the holding of the head at an unusual angle would indicate some type of incoordination. Frowning or squinting indicates farsightedness or astigmatism or both, either of which may affect visual functioning. Skipping or loss of place would suggest testing for binocular coordination.

Suppression is a learned act which is often employed, usually unconsciously, by an individual who is paying too dearly in terms of nervous energy for his vision. Normally an individual employs binocular vision, that is, a fusing of the ocular images of each eye into one visual image. If because of a lack of some visual skill this task is too difficult to perform the visual centers will finally fail to recognize the image of one eye; the individual thus becomes a one-eyed reader and solves his problems in this manner. One of the simplest ways of testing for suppression is to hold a pencil at arm's length and directly in front of the nose while looking at some distant object. If only one pencil is seen, while still

watching the distant object, only one eye is being used. The process may be reversed. Look at the pencil; objects at a distance should now appear double. To state it another way, objects inside of or beyond the object of regard or point of fixation should appear double since they fall on non-corresponding points of the retinae. Care should be exercised to insure the subject's understanding of what is expected of him. Some children refuse to report seeing double on the first trial, as they know that there really is only one object; at other times it is easy to tell that the child is seeing double due to the broad grin that will appear on his face when he is made aware of this phenomenon for the first time. But it is not uncommon to find a child who really does not see double under these conditions; in a case of that type he is actually suppressing. This is one of the surest indications of visual difficulties.

Another test which is easy to make and is often quite revealing is the pushup test. It is made by having the subject fixate or look at a pencil held in front of his nose at arm's length. It is then slowly drawn in toward the nose. If the subject is not able to maintain binocular fixation on the pencil until it is to within four or five inches of his nose there is a convergence insufficiency. On this test it will manifest itself by one eye or the other turning out and losing fixation of the pencil; this is easily seen by the observer. If the subject is not suppressing he will be aware of the loss of fixation by seeing double. If however, he does not report seeing double and the operator notices the eye lose fixation (turn out) the vision of that eye is being suppressed.

Inability to follow a moving target with one or both eyes is another indication of improper functioning vision.

Severe cases of incoordination are revealed by the cover test. It is made by having the child fix on a pencil held at arm's length or by the examiner at that distance; one of the child's eyes is covered but in such a manner that the observer can watch the movements of it if any occurs. The covered eye should hold fixation just as the non-covered eye does. If however there is an extreme esophoria or exophoria the eye will be seen to deviate. On uncovering the eye the child may see double while the eye is recovering or the eye may not recover the fixation at all. Esophoria may be defined as a tendency for the eyes to deviate inward, or an actual deviation when fusion is broken as in the case of covering one eye. Exophoria is a similar condition in which the tendency or deviation is outward. Eames states that this condition, exophoria, is the predominant type of incoordination and presents the greatest difference between good and poor reading groups. It results in the early onset of fatigue, insufficiency of convergence in reading, impaired fusion, irritability, and inattention. He tells us that when the eyes deviate the retinal images no longer fall on corresponding points and that the resulting mental picture is blurred or confused. That is to say, during the stimulation of non-corresponding points there is a superimposition of images such as to create the impression of a composite word or letter which may be quite unfamiliar or may blend into a familiar looking symbol. Although compensation may clear vision, fluctuation occurs

causing the eyes to waver and thus increase the fatigue. If the incoordination revealed by the cover test is exophoria it will also reveal itself on the push-up test. One way of observing faulty eye movements during reading is to have the child hold his book in his hands. The observer standing in front of the child looks directly over the top of the book to observe his eye movements. Are there too many fixation pauses or backward movements? Does one eye seem to lag behind the other? In order to develop ability in making such observations do this for both good and poor readers and note the difference. The visual anomalies so far discussed are those likely to occur in cases having so called "normal" visual acuity, that is, they are able to read the twenty foot line on a visual test chart from a distance of twenty feet. They are for that reason quite frequently allowed to slip by unnoticed by the ordinary school vision test which usually consists of asking the child to read a line of letters on a chart twenty feet away. As teachers we are more interested in how his eyes function while reading a book. This can only be ascertained by making functional tests such as those which have been suggested. If however, the Snellen chart does reveal reduced visual acuity or the tests of visual skills suggest a lack of visual coordination the child should be referred to a competent visual specialist for further visual testing. That testing should include an examination of the skills involved in reading and necessary for efficient seeing as, fixation ability, focusing accurately and quickly, reserves of convergence and divergence, the relationship between convergence and accommodation known as triangulation. It should also include a charting of the physiological blind spot and a measurement of the fields of vision as some children (and adults) are found to have enlarged blind spots and restricted visual fields.

The need for visual training and functional tests of vision is indicated in an article, "Training Eyes To Read", by Ilg, Davis, and Gray, in which they found by carrying on an investigation for two years that over thirty percent of children who were having difficulty with learning in school were handicapped because of various irregularities in their visual functioning. Keenness of vision is not all that is required, as the process of learning to read involves a number of visual functions quite apart from the ability to name a letter of the alphabet at a normal reading distance. They conclude that many children are attempting to learn in spite of a handicap which they can do little to surmount through their own effort-- deficient functioning of a process that is vital to learning. It is not strange then that the few who do succeed in compensating by extra effort, do so at great cost to nerves and general health.

Lloyd Mills in his article, "The Art of Seeing", and Henderson and Rowell in an article, "Good Eyesight is Developed--Not a Gift", stress the need for special training as an aid to good vision. Hygeia recently carried an article explaining how visual training is now employed to correct cases of squint (cross-eyes). In most cases of squint this alone is sufficient but even in severe cases requiring surgery it is still necessary to employ orthoptics in order to teach the individual how to manipulate his eyes to obtain binocular singular vision.

Typical Case Studies

In a recent number of the Los Angeles Times Sunday Magazine the life of George Campbell was publicized. He was born blind due to congenital bi-lateral cataracts. At the age of eighteen an operation gave him his sight. His case is of interest to us because his maturity and experience gave him unusual insight into his visual problems. He found that his newly acquired vision was adequate for visual tasks except for reading printed word symbols. When he attempted this he was troubled with severe headaches; his reading speed was very low and his comprehension was practically nil. About a year later he heard of orthoptic training and asked that he receive it. Training was provided. Recently at an open meeting sponsored by the Los Angeles Optometric Association he told his audience that he was now able to read as well as anyone. In relating his experiences in learning to see he added, "Most people do not realize how much of their seeing is actually brain work, reasoning and past experience."

Another interesting case is that of an eighteen year old boy who was discovered to be nearsighted when he entered school. For this reason the specialist in whose care he was placed recommended that his vision be conserved as much as possible until after his adolescent period.

The case history is that of a typical progressive myope (nearsighted person) for whom minus lenses had been prescribed early in his school life because distance vision had become blurred. No attempt seemed to have been made to analyze the visual situation at the near point where the real cause of the progressive myopia was found to be. An examination by a specialist interested in visual functioning as well as keenness of vision revealed the full lens correction to be contraindicated in all near point findings. Continued use of the eyes for near work, through the distance correction, could only be affected by maintaining postural adjustments of focusing and convergence mechanism which would increase the myopia. A pair of plus 1.25 diopter lenses were prescribed to be worn over his distance correction for all near work to neutralize a part of the minus at the near point,(minus lenses make possible clear distance vision for a myope but they cause an added strain for near seeing). During this time visual training was given to develop certain visual skills which were found to be inadequate. At the end of one week of training another examination revealed improvement in visual skills, especially near point findings. As these data were more reliable than the previous and as there was a definite trend toward improvement the distance correction was reduced. The use of the plus lenses and the visual training was continued and at the end of two weeks another examination was made; continued improvement was noted so the distance correction was once again reduced and the same training procedure carried on. At the close of school the boy reported that he was less conscious of his "eyes", that he was able to read with less effort and that he thought that he was doing better in his class work.

Perhaps a more typical case is that of a college freshman who was doing such unsatisfactory work that she was in danger of being failed. An

examination with the Betts Test revealed no marked irregularities in her vision. However, the pencil test for suppression indicated that she had developed a one-eyed pattern. The push-up test supported this conclusion as the left eye lost fixation at a point eight or ten inches from the eyes and there was no diplopia reported (diplopia - double vision) or awareness that the left eye had ceased to function. These two tests indicated the need for a more thorough visual examination. Fortunately for the girl she chose a specialist whose examination included testing of those visual skills necessary for efficient reading.

The following report of the examination was made. "All focus skills and postures seem to be within average normals for her age. All fixation and convergence postural adjustments are also within normal limits. However, this patient fails miserably on all dynamic fixation tests and shows very poorly developed (or impaired) motor control during any visual activity requiring skill in quick accurate fixations. Such faulty fixation ability and its accompanying sensory suppression would interfere with the reading process, especially speed and comprehension."

No lens correction was required but visual training was suggested and proved to be of great benefit to the girl, as evidenced by her improvement in scholarship noted by her instructors as well as by herself.

This last case is chosen to illustrate how static tests of posture or of structure alone may not reveal the difficulties whereas a few tests of visual functioning will. It is typical of the kind that will be reported as "eyes OK" by the examiner who thinks only in terms of a pair of eyes, a pair of glasses, and visual acuity on a chart twenty feet away.

The responsibility of the teacher is to look for and discover visual difficulties and in so far as possible solicit the help of parents in seeing that the child receive the help needed and available.

At present the type of visual training mentioned here can be administered only by specialists licensed for such work, just as we are licensed to teach. Perhaps some day such training will be a part of the regular school health program.

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SPEECH IN THE EDUCATIONAL PROGRAM TODAY

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Speech is verbal language. It is more than verbal language; it is action and sound and words and language composition. It is language. Speech involves both communication of meaning and interpretation of meaning. Reading is one part of speech! But in order to avoid misunderstandings, we shall discuss today only the communicative function of speech. Our definition of speech today, then, may be: Speech is the communication of meaning by use of the capacities that lie within the individual who is speaking. One needs no pens, typewriters, radios, telephones, or heliographs to communicate by speech. Experiences in interpreting meanings determine the patterns and techniques an individual uses in his speech communication.

Speech has broad significance in curriculum planning: all reciting, reporting, group planning, questioning, answering, is speech; al signs and signals in pantomime are speech. Speech is emphasized in conversations, discussions, story telling, reading aloud, dramatization, and programs. These are all specialized types of speech behavior involving basic speech skills.

These basic skills involve evaluation and facility in the use of meaningful bodily activity, voice, articulation, diction, and grammatical construction. The relationship of these skills to communication is demonstrated in the "handy" rules of speaking (see next page). Just as the thumb of the hand is helpless to work alone, so meaning is useless unless it is communicated by action, voice, diction, and grammar.

The program of speech education should include these basic skills as well as the applied activities that involve use of the skills.

Applied Speech Activities

1. Original Speaking
   - conversation
   - extemporaneous speaking
     - experience stories, imaginative stories, talks, reports
   - interviewing
   - discussion
     - criticism
   - persuasive speaking
   - parliamentary activities
   - argument
   - debating

2. Dramatics
   - dramatic play
   - creative dramatization
     - pantomime

The Five Finger Rules of Speaking

1 - Bodily Activity - Communicative
posture - gesture - facial expression
(what we see)
2 - Sound - Voice
pitch - loudness - inflection - quality
(what we hear)
3. - Diction - vowels and consonants
articulation - enunciation - pronunciation - usage
(how we utter sounds in words)
4. - Language - English Construction
vocabulary - grammar - phrasing
(oral composition
5. Meaning - content
idea - thought - feeling - mood
(what we understand)

shadow plays
interpretation of character
impersonation
acting
suggestive costuming
elementary stage management
suggestive stage design
pageantry
puppets and marionettes

3. Story Telling
extemporaneous presentation of another's composition

4. Interpretation
oral reading of prose and poetry
memorized reading
choral speaking

Now, if we were educating machines, we could point the adjusting handle to C.A. six years, M. A. above six years, turn the crank, and get out of the mill thirty-five exactly uniform little pupils to put into the beginning classroom. Happily, we don't turn out our children on an assembly line. And the members of the beginning first grade class are no less uniform in speech capacities than they are in height, weight, color of hair, or disposition.

Before they start to school, all American children have made some progress in each of the basic speech skills. Communication by means of actions and tones is well established. Most English vowels are used appropriately. About half of the children entering a first grade have fluent use of consonants; the others are in one stage or another of developing them. Vocabulary is growing and broadening rapidly, and also facility in expressing fine shades of meaning with complex language forms.

In the usual 1B class, the teacher may find one or two pupils who exhibit perfect speech; they have established all the sounds of English speech and use them consistently in words of everyday talking. And she may find one or two whose speech shows that the usual pattern of learning has been disturbed by some factor or factors not usually concerned with the "normal" speech pattern. These factors are pathological to speech, and the speech of the child is "defective." Of the remaining children in the first grade room, approximately half have learned to produce all of the sounds of speech, but do not do so consistently. They seem to have dropped the careful, precise articulation that is characteristic of the speech learning period, and substitute habitually one sound for another. This is particularly true of three sounds: initial wh, final zh (as in garage), and final ng in two-syllable words. The habitual substitutions for these three sounds are, w for wh, dzh for zh, and n for ng. These three substitutions are characteristic of the enunciation of many adults in America, and so perhaps, we should consider that children who make these substitutions have really reached the degree of perfection in speech that is held standard by adults of the child's community. My personal

opinion is that, since all three of these sounds are acoustically pleasing, they should be preserved in the language and should be taught correctly to the children in our schools.

Now the remaining half of the children in the first grade room have not yet learned to produce certain late-developing consonant sounds appropriately in all of the words they use daily. They are in one or another of the stages of baby-talk, as usual a phenomenon of child growth and development as creeping or losing the baby teeth. Their speech is not defective for them. It may present a problem of emotional adjustment, but it need never be the reason for a child's being sent to a speech clinic or even to a speech-correctionist. These children will develop sounds at their own rates of growth by participating in the classroom listening lessons and other speech activities along with "normally" speaking children.

By seventy-two months of age, not every quite-normally-growing child has matured sufficiently in speech facility to articulate perfectly the sounds of l, th as in thin, th as in then, z, s, r, and perhaps wh. He has just perfected the sounds of f, v, sh, and zh. He is developing speech like all English-speaking children develop it if he makes these substitutions for the sounds he has not yet mastered: w for l, f for voiceless th, v for voiced th, w for r, w for wh. At the same time, if his teeth have begun to move out or in, he may substitute th for s and z. He may even omit l and r altogether. He may substitute z for zh, and s for sh. But he is more childish than most children of his age if he substitutes d for th. And if he should substitute any sound for b, p, m, w, h, d, t, n, g, k, ng, or f, at seventy-two months C.A., he is not exhibiting the usual growth pattern. Nor is he if he should substitute p or t for s, sh, or th. These latter substitutions in themselves indicate a pathological condition that must be remedied before the child's speech can develop as with the usual child. The speech clinic provides help for the child with pathological conditions of speech.

Now there are reasons for growth according to the pattern along which the usual, "normal" child develops articulation of speech sounds. There must be structural perfection and functional maturity of tissues involved in (1) intelligence, (2) hearing, (3) dentition, and (4) kinaesthetic awareness of position of tiny muscles in larynx and tongue, plus facile control of muscles and processes used for the vegetative functions of eating and breathing.

Furthermore, growth in speech is closely related to other influences and evidences of growth and maturity. There is positive relationship between facility of speech and mental age, reading age, and social adaptation and behavior. Boys, in general, are slower in reaching maturity of speech than girls. Children who have had nursery school and kindergarten experience show tendencies to mature earlier in articulation than those who have not had such experience.

The rate or amount of speaking, or even the economic status of the parents,

influences the pattern little or not at all. The usual American child has established all sounds of English in his speech at ninety months, C.A.

The application of speech growth and activities to the curriculum is shown in the "Sequence of Emphasis" for several levels which follows. We shall, of course, hope that there will be few of the latest sounds to develop in the early reading materials, whether it be experiences or books. And if they do occur, we hope that a child will not be classed as a speech defective if he is not able to articulate them with ease and perfection.

A SPEECH PROGRAM FOR THE CHANGING ELEMENTARY SCHOOL CURRICULUM

From the Quarterly Journal of Speech, October 1936

Mrs. Irene Poole Davis

A program of unit activities in speech education for elementary grades, intended to serve the new curriculum as a tool for the fusion of content subjects and group activities.

SEQUENCE OF EMPHASIS (Informational Experiences)	SUGGESTED ACTIVITIES (Practice Experiences)
Activities for Pre-School and Kindergarten	
1. Expression through bodily activity	
Relaxation	Rhythmic games and dances Quiet resting periods; imitations of folding up, withering, melting, flexibility, etc.
Freedom of bodily movement	Pantomimic games; dramatic play
Control of breathing	Voiced and voiceless breathing games
2. Appreciation of sounds	
Ear training for sound discrimination	Listening games; imitating sounds
Vocal interpretation	Guessing games of sound meanings
Accuracy in the articulation of all vowel sounds and the sounds of the consonants: b, p, m, w, h, d, t, n, g, k, ng, y, f	Phonetic practice through games and jingles
3. Co-ordinated expression for joy and Delight	Dramatized rhymes, jingles, songs
Conversation	Sharing experiences and interests
Story telling	Repetitive stories told and played
Dramatization	Spontaneous make-believe
Activities for Primary Grades 1,2,3	
1. Bodily activity	
Freedom of movement	Pantomime; shadow plays; rhythms
Suggestion of character	Games of "Let's pretend"

2. Sound accuracy	
Accurate articulation of all sounds (In addition to the sounds mentioned above, the consonants, v, th as in the, zh, sh, l, z, s, r, th as in thin, wh, and combinations should be well established in words by eight years of age.)	Phonetic games: vocal guessing games; repetitive stories; language games
Correction of speech disorders	Clinic
3. Co-ordinated expression	
Conversation	Activities and interests in classroom Tales of pets, hobbies, experiences, ambitions, desires
Story telling (as sharing)	Short imaginative or experience stories
Dramatization	Playing spontaneously parts of stories read or told
Oral reading (for joy in sharing)	Reading hours; poetry hours; ensemble verse speaking

Activities for Elementary Grades 4,5,6

1. Bodily interpretation	
Appreciation of character, mood, feeling	Games of interpretation; guessing games; pantomimic games; shadow plays; motion pictures; scenes in pantomime
2. Diction	
Correct articulation	Phonetic games; "tongue-twister" jingles
Accepted pronunciation	Comparison of letter-spelling and sound-spelling; language games; word games
Vocabulary enrichment	Listen for new words; learn to spell, pronounce, and use them; use the dictionary
Correction of speech disorders	Clinic
3. Co-ordinated Expression	
Appreciation of character, attitude, feeling, mood	Impersonations
Dramatization (Educational dramatizations are spontaneous, "created" from ideas or situations within the children's experiances, and expressed in their own language)	Scenes from stories told or read, scenes from social studies and other school activities Simple stage techniques of stage picture, direction, makeshift, costuming, scenery ; Dramatic club
Story telling (artistic retelling)	Story telling hours; radio hours; programs

Oral reading (artistic sharing)	Reading hours; verse choirs; programs
Original speaking	Talks; reports; interviews; class research; discussion; news events; announcements
Group movement	Parliamentary activity in clubs; persuasion
4. Integration of interest, information, and activity (This speech program provides the strands by which all other school activities may be bound together into a unit of common interest. The subject matter of all elementary informational courses is used in practice experiences that promote ease and facility of expression)	Unit lessons; projects; demonstrations for sharing rather than for show

Activities for Junior High School, Grades 7, 8

(To be introduced in the order that is most useful for integration of class interests, information and activity)

UNIT I Group Conduct

Conduct of meetings; duties of officers; nominations; elections; motions; criticism; announcements; introductions; responses; rules of order; by-laws; constitutions

UNIT II Basic Rules of Speech

Five-fold nature of speech; action; voice; diction; language melodies, rhythms, dialects; phonetic language; development of words

UNIT III Story-Telling

Development of language; myths; legends; anecdotes; professional story-tellers; locutor, bard, minstrel, jester; after-dinner stories

UNIT IV Conversation

Qualities of good conversation; problems involving different types of persons and sizes of groups; techniques of changing subjects and information upon which conversation may be based

UNIT V Interviewing

Qualities of good interviews and good interviewers; kinds of interviews; respect for authority and personal details; questioning; use of appropriate terms; newspaper interviews; examining and cross-questioning

UNIT VI Original Speaking

Rules of good speaking; note-making; outlining; giving directions; narrative experiences; expository reports; class recitations; arrangement of content material; sequence of ideas; choice of vocabulary; essays

UNIT VII Discussion

Purposes and forms of group discussion; symposium; small group and round table methods; forum and panel discussions

UNIT VIII Persuasion

Persuasive techniques; purposes and means of rhetorical persuasion; motives and techniques of rhetorical persuasion

UNIT IX Argument and Debating

Rules of the debating game; uses of rhetorical persuasion in debating; argument; proof; evidence; authority; briefing

UNIT X Oral Reading

Technique of good reading aloud; application of principles of speech to reading; critical appreciation of artistic reading

UNIT XI Dramatization

Character interpretations; tempos and rhythms that suggest feeling; create scenes from ideas; make plays from scene dramatizations; simple stage directions; puppet plays

UNIT XII Formal Drama; Pageantry; Programs

Plan, prepare, and present to a new audience a play, pageant, or program, based upon the year's interests in speech and content studies, particularly social studies, and other school interests. The work is entirely creative, built from the original speaking or dramatization strands of the program.

VISUAL AIDS IN THE CLASSROOM

Jay D. Dresser, Director, Department of Instructional Materials
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It appears necessary to preface a discussion of "how to read a picture" with the consideration of various psychological and technical factors underlying the selection of pictures for use in the classroom.

Though this may seem an almost needless summarization of that which is common knowledge in educational circles, it is necessary that these basic factors be consistently followed in order to ensure the effective use of any form of teaching aid.

Hoban, Hoban, and Zisman in their volume, "Visualizing the Curriculum", perhaps best stated those factors or principles affecting the use of any teaching aids.

In the first place, a teaching aid, whether it be a photograph, textbook, motion picture, or model, is as effective as the degree of realism it attains for the learner involved. The experience which the visual aid furnishes a child must be real to him to be effective. The motion picture can be eminently successful in this respect, for the individual projects his experience into the pictured situation and action. Thus, the situation becomes oftentimes intensely real to him.

Secondly, the value of any specific teaching aid depends upon the nature and extent of the pupil's experience. For instance, a picture of the driving wheels of a locomotive would mean little or nothing to a child who had no direct or vicarious experience with trains. However, if that child had visited a railroad yard, had seen locomotives in action, and by means of pictures, discussions and other such aids had gained some concept of the nature and functions of trains, the photograph of the driving wheels would undoubtedly have had far more meaning.

Thirdly, the effectiveness of the aid is dependent upon the mental maturity of the child. The more mentally mature child is better able to see the relationships presented. For instance, a picture of a Swiss chalet would suggest to the so-called "dull" child only an interesting house set on the side of a very beautiful mountain. He would no doubt appreciate the differences of dress and topography apparent in the picture. The child more matured mentally, however, would observe the rugged mountains, alpine snow fields, and dense forests of evergreens. He would see the relationship of such a country to its climate. He would be able to make the deduction that houses in such a country would have to be protected against heavy snows, hence the reason for the extreme overhang of the chalet's eaves.

Lastly, the picture selected must be directly connected with the objectives of the lesson to be truly effective. This last principle may seem such a "truism" as to be quite trivial, yet it is often disregarded

in the use of audio-visual aids. Teachers are too prone to exhibit all of the pictures that come in the morning shipment, whether or not they all contribute effectively to the lesson, merely because it "would be a shame to waste any of the pictures." There seems to be universal belief that the intrinsic value of visual aids is enough to offset whatever irrelevance they may have to the particular unit of work at hand. There is, without doubt, value to be gained by "picture browsing", just as there is by thumbing through encyclopedias and dictionaries. However, our concern at the moment is in the selection and effective use of pictures, and the full utilization of a picture in the classroom demands that that picture be vitally related to the objectives of the lesson involved.

In the light of the foregoing psychological principles underlying the use of visual aids in the classroom, it may be well to mention several more or less obvious technical aspects involved in the selection of a picture:

(1) The picture must be accurate in every detail. A historical picture depicting Daniel Boone carrying a repeating rifle or General Washington wearing a wrist watch are examples of inaccuracies sometimes found in hastily prepared teaching aids.

(2) The picture, must truly characterize the subject. In other words, a picture of only the gang plank of an ocean liner would not convey a true impression of the size, shape, or function of such a vessel.

(3) The picture, whether it is a photograph, slide, halftone, or painting, should be technically good from a production point of view. An improperly developed photograph, grayish and fuzzy in appearance, is hardly effective as a teaching tool. It can scarcely convey an illusion of reality. Modern methods, equipment, and materials make poor pictures practically inexcusable.

(4) Good composition is most desirable in a picture. A more dramatic presentation of a subject is an added stimulus to interest in the study of a print.

(5) A picture should have action to stimulate interest. For example, a static view of a battleship lying dully at anchor would hardly compare with the picture that could be made of that ship crashing full steam through heavy seas. It is possible to present such a sense of action in a still picture that it will convey an accurate feeling and understanding of the true function of the subject pictured.

(6) The picture should be presented in the proper size. Prints up to 11x14 inches in size are adequate for individual and small group study, but the large photomural or the projected slide is necessary when working with the entire class. The effectiveness of large pictures in stimulating interest was well demonstrated at the various world fairs in recent years.

(7) The number of pictures used should definitely be limited. Perhaps the

total of twelve or fifteen would generally be the most that should be used. Professional photographers have found that a strict limiting of prints in an exhibit has netted far more satisfactory results than the unlimited and indiscriminate mass showings. The same holds true in the classroom. Interest is best stimulated and sustained by a few well-chosen pictures.

Thus, in brief review, the principles underlying the selection and use of a picture are: (1) it must have the illusion of reality for the pupil; (2) it must be directly related to the child's past experience; (3) the picture should be matched with the mental maturity of the student; and (4) it should be definitely connected with the objectives of the classroom lesson in progress.

The technical considerations involved in the selection of a picture are (1) that it should be accurate and truthful; (2) that it should truly characterize the subject; (3) that it must be technically good in appearance; (4) that it have as much as possible the elements of good composition; (5) that it have action; (6) that it should be of a size proportionate to the conditions under which it is to be shown; and (7) that the number of pictures selected be definitely limited.

Once a picture has been selected, the question of its use in the classroom becomes vitally important. Teachers are consistently disturbed if not always discouraged by the short-lived interest afforded even the best of pictures by students. Our Department of Instructional Materials recently loaned a series of very excellent photographs on frontier life to a school engaged in a unit on the Westward Movement. The students displayed the greatest of interest in the pictures as they were first put on exhibit, but, once each picture had been inspected, interest in the prints faded. Careful questioning disclosed thefact that nothing was wrong with the pictures; in fact, they were perfectly satisfying to the children. Yet the teacher was disappointed for the students did not look at the pictures more than once. He must have felt that the still photograph was not an effective teaching tool.

The fault in this case, however, was with the teacher. He had done nothing apparently to teach the students how to read the picture.

In the first place, even the adult is perfectly satisfied to merely survey a picture. Seldom do any of us go to the extent of analyzing a print. For example, we may get a great deal of pleasure from looking at an unusually sharp and dramatic photograph of the Golden Gate Bridge. We may pause long enough in viewing the print to gain some appreciation of the immense span of the bridge or of the fine photographic qualities embodied in the picture. Yet, no doubt, the next time we passed the photograph, we would give it scarcely a glance. This is the usual case in the classroom, and, of course, represents a wasted learning opportunity.

The problem, then, is to develop and to train students to analyze or to "read" a picture rather than to merely survey it.

Dresser 4

Artists and teachers of photographic composition have long held forth on various theories as to what movement the eyes follow in looking at a picture. It is hardly worthwhile to attempt any discussion of the wealth of theories on this subject, yet it does seem apparent from a study of eye movements that the child in viewing a new picture makes a rapid survey of the print as a whole. It is at this point that the student, as well as the adult, may have found this initial survey so satisfying that he feels no necessity for further study of the picture.

Therefore, the child's attention and interest must be centered upon certain aspects of the picture in such a manner as to cause him to study those features and to thus bring about a full understanding and appreciation of the picture's true significance. Learning to analyze a picture in contrast to merely looking at a picture results in learning as well as satisfaction and enjoyment.

There are three primary principles involved in the analysis of a picture. They are contrast, comparison, and continuity.

In studying a picture various contrasts may be noted-- contrasts of time, space, materials, and ideas. A picture of Lake Mead would present the startling contrast of a mammoth lake in the midst of a very barren desert, and, upon study, should lead on to further questions and discussion concerning the reasons for such a body of water being in that country .

Comparisons are present in most pictures, and can be determined upon analysis. The massiveness of the concrete piers of the Golden Gate Bridge could be compared with a "shot" of the spidery slenderness of some of the supporting cables. The height of the span could be compared with the size of a large ocean liner steaming beneath it.

The third principle, that of continuity, was well illustrated by Hoban with a print of a wild duck taking off from the glassy surface of a lake. A series of splashes, rapidly diminishing in size, were caught by the fast shutter of the camera, and showed graphically how quickly the bird gained speed as he half-ran across the surface of the water. The continuity of the splashes left no question as to the fact that the duck was lifting itself from the lake.

Though vividly portraying the continuity of action involved in the duck lifting itself from the surface of the water, the picture could also be used for analysis involving the other two principles of contrast and comparison.

The propellor of the airplane could be contrasted with the wings of the duck. The action of the tail feathers could be compared with the rudder and elevators of the airliner. The position of the webbed feet of the duck while in flight is worthy of comparison with the retractable landing gear of the modern pursuit ship. In other words, through a study of the principles of contrast, comparison and continuity embodied in the picture, such interest may be stimulated among students as to initiate a subject-

matter unit on airplanes or on wild life.

Analysis by means of the contrasts comparison or continuity embodied in a print does not represent the end of the procedure involved in "reading" a picture, however. A photograph as well as the printed word is an abstraction-- a succession of lights and shadows which attempt to depict a concrete object or idea. Looking at that picture, of course, is a visual experience. It is necessary, therefore, to relate as much as possible the facts represented in the photograph or painting to some other sensory experience familiar to the student. Abstract facts in a picture, in other words, can best be interpreted by connecting them with some familiar taste, touch or sound.

Pictured abstractions which will have to be interpreted by the child include the following:

(1) Size . Familiar objects in a picture can be used for purposes of comparisn to convey a sense of size.

(2) Weight. The appearance of a material, its massiveness or lightness, can give an idea of the weight of the subject.

(3) Depth and distance. This sensory experience is developed through a study of the lines of perspective. Distance tends to make objects more indistinct and hazy in outline. An increase in the heighth from which the picture is taken results in a proportionate increase in the angle of the vision. A very wide angle of view would imply great height. The diminuation in the size of an object as it recedes from the eye is another means for determining distance. A picture of the ocean on which was to be discerned the small outline of a battleship on the horizon would naturally convey a sense of the great area separating the photographer from the boat, whose huge form had been so dwarfed by distance.

(4) Color. The ordinary black-and-white photograph, of course, can only suggest colors by means of a subtle gradation of lights and shadows. This gradation is even more finely developed and expanded by the use of modern panchromatic film and photographic filters, and perhaps only the trained photographer could accurately name the colors represented by the various shades of a picture. The color prints and transparencies, which are being so rapidly perfected, will, of course, greatly aid in interpreting the pictured abstractions through familiar experiences in color.

(5) Touch. There is a very close connection between the sense of sight and that of touch. A picture showing smoothness, roughness, dampness, stickiness, texture or grain can immediately set up certain motor responses.

(6) Sound. Various objects or action can convey the sense of noise or quiet. A picture of a speeding train can convey to one's mind all of the noise and clatter present in such an operation. Here again the sensory experience to which the abatract fact in the picture is related must be a

familiar one to the child. If he had never seen a train, he would have no idea of the sound it made.

(7) Temperature. The physical appearance of a landscape can well denote heat or cold, dryness, or humidity. Other facts represented in the picture, such as the type of clothing worn by people can indicate the time of year or degrees of heat or cold.

(8) Odor and Taste. Certain objects can suggest familiar tastes or smells. The full scale color prints of the modern liquor advertisements certainly make effective use of the interpretation of abstract facts in the light of past and familiar sensory experiences of smell and taste. Of course, the manner in which the sleek forms of well-executed bottles and glasses are represented, filled with gorgeously-colored liquids, also appeals to the sensory experiences of touch and color.

(9) Motion . The position or the very nature of the object picture can convey a very strong sense of motion. A bullet leaving the muzzle of a machine gun as pictured by the new "super flash" cameras can graphically impart a very strong sense of motion. A picture of Half Dome in Yosemite would suggest the lack of motion.

In concluding this discussion of the various steps involved in "reading" a picture, it is necessary to state that the teacher must aid the student to develop skills and habits of interpreting abstract facts in pictures. Discussions, questions and answers by both teachers and pupils, the use of games, tests, puzzles and study guides are all necessary activities in training children to analyze rather than to merely survey pictures.

SOME OBSERVATIONS ON THE READING PROBLEM

Guy Fox, Assistant Director of Instruction, Denver Public Schools

I want to discuss this matter of reading from the viewpoint of one in public school education who has worked for several years in the general field of curriculum development and educational testing. I want to refer to some of the observations which I have made and to raise certain issues and questions that seem to me important. The beginning of a conference like this is, perhaps, a good place to raise questions.

Test Data on Reading Achievement

All of us who have administered reading achievement tests are aware of the wide spread in reading ability that one finds in every class. I was recently asked to summarize data on this situation. I found that both at the end of the sixth grade and at the end of the ninth grade, reading achievement was distributed over at least seven grade levels. For example, approximately fifty to sixty per cent of the pupils concluding the ninth grade were reading somewhere in the ninth, tenth, or eleventh grade levels. This represented the middle group. Below them approximately twenty per cent were reading at fourth and fifth grade levels; and above them another fifteen to twenty per cent were reading at twelfth and thirteenth grade levels. At both extremes one to three percent spilled over into grade levels even beyond this range of seven grades. Practically the same picture was presented by the data from the sixth grade.

Let us consider for a moment what this means. It means that at every grade level approximately a fourth of the pupils in any relatively normal situation have "power to burn", as far as reading ability is concerned. They have an extensive vocabulary. They get thought readily from the printed page. Many of them above the sixth grade read with ability comparable with mature adults.

On the other hand, approximately one fourth of the pupils have very limited vocabularies, very limited ability to get information or thoughts, or inspiration from reading. Any text book written for the grade is likely to be as difficult for them to read as a technical discussion of statistics or the atomic theory would be for some of us.

Does this mean that incompetence is inevitable for this latter group of children and that they must be classed as failures? Or, if there is hope for them, if their's is a problem of maintaining normal growth and development (though at their slower rate), does it mean that every teacher in every grade is, or should be, a teacher of reading? Does this wide spread in reading power mean that there should be several text books for each class and materials in a classroom library that range widely in reading difficulty, while still dealing with the subject matter of the grade in a manner meaningful to children of the age under consideration? And how shall we evaluate growth and achievement in such a situation so that guidance is intelligent and yet there is satisfaction on the part of

the teacher and learner and also parents and others concerned?

Another Problem Area: Reading Readiness

We are all aware that some children who have reached the magic age of six years and who enter the first grade do not learn to read. They may be under the best teachers but reading doesn't seem to mean anything to them as yet. We say they aren't ready for reading and, it is my understanding that when we try to train children to do something that physically or psychologically they are not ready to do, we are quite likely to damage them. Yet most parents, and most teachers also, seem quite convinced that when six years have come and gone it is time to stop fooling and teach children to read.

What do we know about this situation? If approximately a fourth of our six-year-olds are not yet ready for reading, (and our test data indicate that this is a conservative estimate), and if we do them harm by pushing reading at them, then we are doing a lot of damage to these young personalities.

Can we measure maturity with sufficient validity and accuracy to do something about this? Can we evaluate the background and cultural experiences that contribute to readiness for reading? Can we, with reasonable assurance, advise parents regarding the readiness of their children for reading experiences?

Reading Handicaps

I remember well when, about ten years ago, our teacher in the Denver schools who administered the individual Binet Tests began to tell me that certain children had special reading handicaps. She began to educate me regarding eye movements and reversals and one day she brought me a sample of mirror writing which, for some unfortunate child, was her usual way of writing. I learned that a child could score high on the Binet test and yet have very low reading ability.

Then, about that time, the principal of a neighboring school tole me of a student of his, a lad of sixteen, who seemed bright and capable in every way, except in reading. He simply couldn't read. He drove an automobile but he couldn't read the highway signs. He would stop when he saw a sign of a certain shape. He still hoped that he would learn to read. He said that his father couldn't read until he was about sixteen, then suddenly he began to pick it up rapidly.

There was the case of Tommy Smith, too. We first met Tommy in the 1A grade after two failures and behavior difficulties had led to truancy and general rebellion. The Binet Test gave Tommy a perfectly normal I.Q., but the tester said he was having serious difficulties with his reading. We recommended special study and treatment for Tommy, but there wasn't time for this, the principal said. Discipline was what Tommy needed and discipline he got; but the record over the years didn't indicate that the

results were very good. Undoubtedly there were several contributing factors, but we always felt that Tommy's reading difficulties and the school's inability to deal wisely with them were primary causal factors in his record of misbehavior and delinquency.

One more incident should be added here. I recently visited a psychiatrist in charge of a children's clinic. I asked him to tell me, in the light of his experiences, where the schools are falling down most seriously. He said, "The thing that concerns us most here at our clinic is the large number of children, mostly boys of ages nine to fifteen, who come, or are sent, to us because they are behavior problems. When we check up we find the trouble, primarily is that they are not reading minded. Therefore, in our reading minded schools these children are frustrated and failed." This psychiatrist seemed to think that the schools should do something different for these children.

Well, what are the factors involved here? Can classroom teachers do anything about these problems? Can they analyze or diagnose the needs of these children? Where can teachers get needed training? What specialists are needed to supplement the efforts of teachers? What specialized equipment is needed? And how can specialists and equipment be made available to the children who are in need?

Reading Interests

I want to comment on one more area of reading problems. Have you ever encouraged children to keep a record of their reading and to make comments on what the books meant to them? It is an illuminating experience. I have read such records and I have been amazed at the discernment and insight and critical reactions of some of the pupils. I would have been proud to have written some of those comments myself. I have been equally amazed by the apparent emptiness and the incoherence of the thinking of other pupils. Why do some people have ideas after they read, ideas that carry over into action? And why is it that other people don't get ideas from their reading?

The kind and amount of reading done by different pupils in any class is also a source of amazement to many of us. Why are some interested and others disinterested in reading, anyway? What causes interest in reading? What can teachers do to cultivate the reading interests of pupils? Much that we have done has discouraged reading- at least of the kind advocated by schools. "I didn't much like The Virginian", a junior high school girl once remarked to companions within my hearing. "We spent so much time hunting for the climzx and all that, I got tired of it."

These are some of my observations and a few of the questions that they suggest. Perhaps this conference is not the place to search for answers to them but these questions need to be answered.

VISION IN RELATION TO EDUCATION

Willis Morton Gardner, Chief Oculist Otologist, Los Angeles City Schools

It seems like carrying coals to Newcastle for me to speak to you concerning vision in relation to reading. Year after year you have had speakers until, no doubt, you have had every phase and idea presented to you; and now, as you listen to new speakers, I can imagine I hear you say, "Why that's what Dr. Q. told us two years ago", and again, "Well Mr. X proved to us long ago that that wasn't true". So I can hardly find an excuse for being here and boring you with repetitions.

The relation of vision to reading in its various phases of "readiness to read", "learning to read", the relationship between visual defects and good reading, visual influences that hinder reading, the effect of reading on vision and the eye, and the relationship of vision and mental concepts-- all these are unsettled problems. The chief reason why they are unsettled problems is that there have not been sufficient experiments or tests, surrounded by a sufficient number of checks to be able to tell just how much influence any one factor has; and the difficulty of such experiments is the multiplicity of factors to be considered.

One difficulty in arriving at a definite, logical conclusion is in getting away from the influence of our own opinions. As Dr. Gertrude Laws said, recently, "We spend our lives trying to prove ourselves right!

I doubt if I have anything new or startling to bring you. What I have to say will be more like a recapitulation than any innovation.

First, I hold with Dr. Mills that, although we may see with the mind, the eyes are the actual tools of vision and that the part of the eye most concerned with education is the central foveal region. That there <u>only</u> are sharp images formed and therefore it is the part concerned with memory.

This is a very vital point. It is the point involved in scrutiny, that is, according to Webster, "minute inspection, critical observation, a and investigation". And this is a very important fact. It involves, not only (1) Sharpness of image, but (2) Fusion, and it is concerned with (3) Fixations and speed in reading.

1. <u>Sharpness of Image</u>

No object is distinctly seen whose image is not focused exactly upon the fovea. Hence, the necessity for correcting glasses. The image is <u>seen clearly</u> when focused upon the fovea but it is only <u>recognized by general form</u> or <u>color</u> or motion when its image falls upon the peripheral retina.

Therefore, for accurate binocular vision, there must be accurate focusing of the images of an identical object on both fovea simultaneously which brings me to my second point.

2. Fusion and Accurate Co-ordination of the Eyes

Again I hold with Dr. Mills, that although the child is taught how to use his other tools of special senses, he is pretty much left to chance as to how to use his eyes, and that ocular training is a process of education. I believe this education should begin early. The child who develops a squint at one or two years of age should be refracted immediately, and glasses if indicated prescribed, in order First: to give him a sharp retinal image, and Second: to attempt to correct the squint. Good ocular hygiene should be practiced from babyhood and I can see no objection to orthoptic training in the pre-school child, if indicated, any more than I would object to training in other co-ordinate movements.

Of course, the question of the benefit of orthoptics is still debated. The oculist who is prone to operate would not subject the child to years of training with uncertain results, but in a questionable case he would operate immediately and develop fusion, post-operatively with a better chance of immediate and permanent results. It would seem sensible in the questionable case to first try orthoptics for a reasonable time, noting whether or not there is any improvement worthwhile and not delay operation if there is none.

In contrast to the immediate operation are the cases given "exercises", so called, for years at a cost perhaps exceeding that of operation and resulting in very slight or no improvement. This should be labeled commercialism if not quackery.

There are too many hundreds of cases that have improved by orthoptic training to say there is nothing in it. It is true that some cases of phorias are not permanently cured by orthoptics, but some specialists do not seem to realize that the training may teach the child to control his eyes properly and to use them comfortably when reading. As Dr. Davis, Professor of Ophthalmology in George Washington University, says: "We may have a functional cure if not a cosmetic." A child may not only be uncomfortable but actually may not know how to control the movement of his eyes, just as the speech defective child does not know how to use the muscles controlling speech. We are aware of the arguments concerning the Proprioceptive Sense of the extrinsic ocular muscles, but fail to see that the case is altered if there be no Proprioceptive Sense. The cases should, however, be carefully selected and treatment instituted in respect to the specific needs of each individual case.

Here we come close to a subject for argument. If ocular training is a process of education should any of it be done in the schools? Is ocular training a part of remedial reading?

Well, of course, first we must know whether, in the particular case, the ocular inco-ordination enters into the cause of the child's poor reading. If a child has a sufficiently marked deviation or squint or amblyopia of one eye it is probably not interfering with his reading. Binocular single vision is not an absolute necessity for good reading. In fact, reading with one eye is easier than reading with two if there

be confusion of images with the two eyes. But if the poor-reading child is handicapped by imbalance or confusion of images, should the attempt at correcting the imbalance be part of his remedial reading in the school itself? Should orthoptics be part of the curriculum as corrective physical education?

In this consideration, we must realize that we are dealing with very delicate equipment and although the eyes will work well for us in spite of considerable abuse they are instruments of precision and the education of the child in the proper, intricate use of them should not be left to the novice. Certainly there should be frequent checks made by the specialists even though the training be by means of automatic instruments. There is no question that the ideal location for orthoptics is in the specialist's office. The difficulty is the need for frequent visits and the question of time, transportation, and cost. The cost to the parent is negligible if the training be given by school employees or in clinics. No orthoptics should be given without being prescribed and that necessitates first an accurate diagnosis.

3. The Fovea and Education and its Relation to Fixations

My third consideration is the fovea and education, its relation to fixations and speed of reading.

The fovea is of definite size. This fact may not be argued. Therefore, a sharp, clearly defined retinal image is fixed as to its size. No amount of wishful thinking nor orthoptic training can change it, nor can the perimacular area be trained into the function of a true fovea. This is known by pathological evidence. Cases of positive central scotoma never develop sharp retinal vision and they form the ideal experiment to determine this. What do we mean, then, by increasing our span? We really mean span of recognition, not of sharp imagery.

The importance of this in reading is as follows: A distinction between the words This, These, and Those can only be made by foveal fixation until the distinguishing features of the words are so well known to the individual that a hazy image of them can be recognized by the perimacular area.

Let me illustrate: When riding in a train and looking out of the car window you can study the minute characteristics of objects two-hundred feet away at the side of the railway. Suddenly, while looking at this distance, an object flashes by three feet from your window. You did not obtain a macular fixation of the image of the object, but by previous acquaintance you recognized the object as a shaggy-haired, large, black dog. But let me ask you if the dog had a collar, if it had a white streak in its face, or a bone in its mouth. You don't know. You did not see it distinctly nor long enough to tell. Now go back to This, These, and Those. If they pass you fast enough-- or to get to the point-- if your eyes pass over them fast enough and you don't know these words any better than you know that dog you can't tell whether the center was Is,

Es, or Os.

In other words, first, it takes time to see. Second, you can't see distinctly with the periphal retina. And third, the perimacular retina cannot recognize without foveal memory and considerable training.

It is therefore wrong to try to make a child read rapidly or to take in more than a few letters of eight to ten-point type at one fixation until he has thoroughly learned the words that he is to encounter.

There can be no good reason for racing down a road that leads you to no desired destination. Moliere said: "We must not hurry. We have not a moment to lose." When a child has his vocabulary and has learned the distinctive characteristics of the words he is to encounter, span of recognition may be enlarged, fixations per line diminished, and speed increased. Until the child has learned this, causing him to try to read rapidly will result in: (1) Lack of sufficient scrutiny to recognize the characteristics of the words. Scrutiny is becoming a lost art. We are in too much of a hurry. (2) Guessing in order to get along the line rapidly, to comply with the teacher's demands. And then come (3) Regressions to correct mistakes. Regressions therefore, are more frequently due to the teacher's method of instruction than to the child's faulty vision. I believe changes in the method of teaching are of necessity being adopted that will help to correct this.

The age at which wide span recognition is attained varies greatly. Also the more technical the text and the more critical the reader is of the style of the writer the less likelihood there is of a wide span.

Reversals cannot be attributed to the eyes, for blind children reading Braille make the same reversals. It is a mental concept, no matter by what sense avenue obtained. There may be, possibly, very rare exceptions to this.

There seems to be a tendency on the part of some eye specialists to belittle the effect on reading ability of moderate degrees of refractive errors. It is true that there is a great deal of difference in individuals as to the effect of a specific amount of error. The chief deciding factor should be not so much the amount as the effect. This is not always easily determined. Often a child does not know that his difficulty in reading is due to his eyes and so his history is negative.

It is my belief that any amount of error that produces symptoms is sufficient to warrant attention and the symptoms may not be headache nor a complaint of the eyes. It may be lack of attention to or sustained interest in close work, even to a dislike for reading due to an unconscious, undue effort at focusing or fusing. A refraction and co-ordination test is, of course, necessary to determine this.

The effect of hyperopia on a beginning reader seems to be debatable. Some believe the effort of focusing is sufficient to explain why some

children never learned to read. This is true in the very high hyperope. It may be true in a very few moderately hyperopic children. However, I have found some of these same moderately hyperopic children exuberant with energy and spending hours at some mechanical occupation requiring close scrutiny and never complaining. The child whose hyperopia is bothering will complain of headaches, blurring of the print, eye tire, and that reading is uninteresting. In the poor reading hyperope without these complaints I suspect the teacher and the method of presentation. The same thing may apply to the child with astigmatism.

Given sufficient urge to read, moderate refractive errors will not keep a child from reading, even the child in poor health, although he may be paying a big price for it. The finding of refractive errors among poor readers is no proof that the errors are the cause of the poor reading.

In a group of one-hundred children fifty of whom were poor readers and fifty good readers, tested by the Betts Test and by the Broken Square Snellen Test, without the examiner knowing to which group the child being examined belonged, more visual defects were observed among the good readers as also more inflamed eyes. One child with a bad, marginal blepharatis was a persistent reader.

On the other hand, there are children with such poor general health and poor physical stamina that even a small degree of hyperopia makes reading too hard a task for them to accomplish.

I am still of the opinion that blame is often shunted to the eyes when the real cause of the poor reading is that the method of presentation did not succeed with the particular individual. Clash of personality between teacher and pupil, frequent transfer to different schools in the first and second grades, failure to grasp the idea by the particular method of presentation, and failure to create an urge to read, I find are frequent in children sent to me to find out what is wrong with their eyes because they don't read well. Often I examine children whose eyes I find practically normal and who have no complaint of their eyes whose vocabulary is woefully deficient. The English language in print is a foreign language to them and I can't understand how they can be expected to read.

I believe the first grade teacher is the most important one in the whole educational system. She should have preparation on a par with the high school teacher and be paid commensurately. Her teaching load should be sufficiently low so that she can become intimately acquainted with each pupil and ascertain early whether or not the pupil is going to succeed by the orthodox method and if not substitute a different approach early. If formal reading is to be postponed then each successive grade teacher becomes equally important. Perhaps there should be less play-like activity and more meeting with the objective world and like activities in the kindergarten and first grade in order, as Dr. Veverka intimates, to establish experiences as a basis for correct concepts for the words and phrases the child is to meet later. I see no reason for slowing up an

activity already practiced intensely for five years. I deplore the passing of children on from grade to grade without the fundamental knowledge which they must have to carry the load required of them in the higher grades. It seems ridiculous to me that it should be necessary to have classes in junior high school to teach the alphabet so that a child may be able to use a dictionary. The relationship of all this to vision is mostly vision on the part of the educators.

When is a child visually ready to read? And here again, we listen by the hour to a lot of sophisticated piffle as to what we mean by <u>reading</u>. Why not come out point blank and say: "I mean, When are a child's eyes ready to undertake the task of recognizing printed characters in lines?" or simpler still, When are a child's eyes ready for book reading? For after all, that is what we mean. I think there should be a sharper distinction made between reading as a mechanical art and interpretation as a mental process; then we would have less confusion of terms. We don't have to be so concerned about the large words placed individually on the board, for the child of four years is already doing tasks with his eyes more difficult than reading these.

The visual state of kindergarten children should be determined. Preschool examinations are good but we must not be overconcerned by slight visual deficiencies, as lack of steropsis, 20/30 acuity, etc., for remember the eyes of these children are still developing. They should, however, have annual rechecks to note the progress of normal development or of myopia or of the beginning of any imbalance. Any decided deviation from normal merits immediate attention by an eye specialist.

Given a pair of eyes that show normal co-ordination and normal visual acuity and no history of ocular difficulty, I see no visual reason for withholding reading within reasonable amounts irrespective of chronological age.

ILLUMINATION AS A FACTOR IN READING THE PRINTED WORD SYMBOL

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Columbus was an authority and he died in chains. Those were the days of ignorance. Darkness and fear ruled the lives of the common man and rare it was when a head was lifted above the crowd to state an opinion not in general acceptance. Those days were long ago--.

Today we live in an intelligent world. Light and fearlessness are the heritages of every man. To express an opinion counter to generally accepted thought also seems to be every man's heritage. Contrary to the practice of the days of Columbus, it is now the effort of many to raise their heads above the crowd and with the indomitable courage of their own convictions shout a home-made truth into the prevailing bedlam. If all the "authorities" among us today were laid end to end there would not be many left standing!

The fields of Illumination and Reading have more than their share of so-called "authorities." This is undoubtedly true because they are such work-a-day, commonplace and simple fields and are contacted everyday-- all day-- by practically everyone. Familiarity bred of constant association has given many the feeling that they have a legitimate, defensible opinion regarding these two controversial fields and their relation to human behavior. Anti-bulb snatching campaigns and fixed lists of light globe sizes for different tasks have made all who own a radio or read a magazine or go to the movies a second Edison.

This tendency is not only a privilege of lay folk. The authorities in many fields engage in miniature sham battles in an effort to establish their pet theories. Naturally this practice is not found in Reading circles, but in the field of Illumination we find physicists and engineers who work for years in research laboratories developing a theory and discovering factual data. They publish their findings and recommendations for practice. The inked symbols relating the results of their labors barely have time to dry before another group of physicists and engineers in another research laboratory begin years of labor and experimentation the whole point of which is to refute, disprove, invalidate, explode, deny, and show the fallacy of the data compiled by their contemporaries.

Very few research laboratories in any field are being operated solely in the quest of pure truth. Subsidies for Truth are as scarce as the proverbial hen's tooth but merchandise must be sold-- more selling and buying appeal must be created, not to mention the status to be gained, the ambitions to be realized, and the propaganda to be disseminated.

Please don't misunderstand me. I am not a cynic. The sciences of Illumination and Illuminating Engineering are babes in swaddling clothes. Edison didn't get around to inventing the electric light until 1879, and as we know light is simply raw material that must be refined into illumination. As one author very aptly put it, our knowledge of light and illumination could be compared to the knowledge of a pianist who can play only

Chop Sticks with one finger on the middle octave of the key board. This statement must be kept in mind when we evaluate progress in this field. The symphonic suites for orchestra and piano are still very much in the simple melody stage of composition. The tremendous and awe-inspiring harmonies that will be created in this infant field are wonders of the future. I for one am patiently impatiently waiting to hear and see them.

In spite of the fact that some of the basic principles of the science of illumination yet have not been established to everyone's satisfaction, there are many in general acceptance. We will limit our discussion to these established principles and try to avoid, if possible, the controversial issues.

In order to consider intelligently the role of illumination as a factor in reading printed word symbols, we first must look at the visual process in its entirety. When we examine the many ramifications of vision in the hope of finding ways and means of improving it, illumination as one factor of the visual process becomes of paramount importance. This is true because we will soon appraise lighting as the one variable over which we as individuals have the most control.

Just as sound without ears to hear, vision without the other human agencies necessary to interpret it is meaningless. Vision then must be considered as a complicated physiological, psychological, and pathological process, the intricacies of which make the wonders of our recently completed B-19 bomber look like a ten-cent Tinker Toy.

Luckiesh and Moss have charted a chain of variables all of which affect the visibility of an object. They make five large divisions of factors and then break each large division down into some of the contributing factors. Under Characteristics of the Observer are listed Physiologic, Psychologic, and Pathologic factors. Under Parameters of Visibility they list Size, Brightness Contrast, Color, Brightness, and Time. Under the broad heading of Modifying Factors are placed Retinal Adaptation, Method of Lighting, Character of Surroundings, Simultaneous functioning of other senses, Spectral quality, Fixation distance, after images, ocular movements, and pre and post exposures.

The heading Recognition Requirements includes Presence or Absence of Object, Whether the object is fixed or in motion, and Details of Object. The last heading of Complexity of Object lists Foveal or Peripheral, Physical complexity, and Interpretation required. This chain brings us up to the Threshold of Vision. Of course, the first heading of Characteristics of the Observer includes the actual eye structure with its total defects. I say total defects because to my knowledge a perfect eye has never yet been found.

This information concerning vision is injected in this presentation only for the purpose of bringing to your mind the thought that seeing is a process that is not confined to the eyes and brain, but in reality is a process involving the whole human mechanism. It is reasonable to assume

that if the whole human structure is involved in the process of seeing, then the whole human structure is effected in a positive or a negative way by reason of this process. Our topic limits this discussion to just one aspect of vision-- that of illumination-- illumination as a factor in reading the printed word symbols.

From this point on it would seem proper to conduct our discussion in the following manner: first, we will consider illumination as a factor in visibility-- then as a factor in health-- then as a factor in esthetics; second-- we will consider our own reading environments, particularly in relation to schools and dicuss some things that might be done to make them more acceptable to our visual sense while reading the printed word symbol-- providing, of course we can accept the conclusions drawn in the first place.

The Sun was our original light source. During her annual, dizzy trips about the Sun, the Earth turns first one cheek and then the other to receive the radiant energy old Sol puts forth. Part of this radiant energy registers on the Spectrum in a band lying between approximately 3900 and 7600 angstrom units and thus is visible to the human mechanism which makes up our visual apparatus. This radiant energy we call light. Light thus produced by the sun consists of the colors we know as belonging to the spectrum. These colors range from violet on the low end to red on the high and with all the intermediate hues, values, and chromas blending together in lovely color harmony. The ultra-violet on the extreme low end and the infrared on the extreme high and of the spectrum are not visible to humans.

The great abundance of so-called natural light goes bouncing about the earth until it contacts a substance of one kind or another. For the sake of illustration let us say it strikes a tree in full leaf. Each part of the tree receives the same light and each part absorbs some of the light and reflects or throws back the spectral lengths it does not absorb. Some roving eye is in that particular neighborhood, and as it turns toward the tree, it receives the radiant energy each part of the tree has reflected. The transparent portions of the eye pass the radiant energy we will now term light to the retina of the eye. Both eyes move in their orbits until the visual fields fall on approximately corresponding parts of the retina. Small corrective movements are performed at the same time the muscles controlling the shape of the eye lens operate to increase its curvature until the tree is focused upon the retina. While this has been going on the pupil of the eye has also changed in size in order to compensate for normal lens defects and because of the difference in brightness between the blonde which had been in the field of vision before and the new field of vision, the tree. Countless sense endings in the retina pick up the differences in brightness in the image now focused on the retina and scurry along the optic nerve systems to the brain where they transmit their startling story to the brain. Brain cells go into a huddle and are forced to interpret the nerve impulses into a tree: green leaves, gray bark, and all the rest of it. The only thing they can't understand is why the field of vision was changed to a tree from a blonde.

The sequence we have just related gives you the part light plays in the drama of seeing. There are several factors accompanying light, however, which make it either a help or a hindrance in the visual process. The first of these factors is intensity. The intensity of light is measured in terms of foot candles. A foot candle is the unit of illumination and may be defined as approximately the illumination on a small area of a vertical surface one foot from an ordinary candle. In our natural out-of-doors world we find illumination measured in hundreds and thousands of foot candles. On a very bright day about noon it would be safe to guess the amount of illumination in an unshaded spot at between 7,500 and 10,000 foot candles. In the shade of a tree those intensities would be lowered to between 350 and 500 foot candles. Those are the levels of illumination under which man has done his outside work since woman had him thrown out of the Garden of Eden. He had no print to read until about five hundred years ago and when the sun set any tasks that even faintly approximate critical visual work were forgotten.

The second factor of light which is a seeing variable is brightness. Brightness may be defined as the result of illumination and reflection-factor of diffusing surfaces. The unit of measure for brightness is the foot lambert. An example of a brightness measurement would be the north sky, ten degrees above the horizon, which on a clear day in December would register approximately 1000 foot lamberts.

Reflection factor is another of the variables we will discuss here. When light strikes a surface that surface absorbs some of the light and reflects back the energy that is not absorbed. Reflection factor is measured in per cent. For example, a newly painted flat white surface will reflect between 75 and 95 per cent of the light striking it.

Another factor of light which must be considered in seeing is brightness-contrasts. Obviously, if all objects to fall within the field of vision were identical brightness it would be very difficult to discriminate among them.

Brightness-contrast is the ratio of the brightness-difference to the brightness of the background. In other words, the brightness difference between an object and its background.

The factor of brightness-contrast in lighting is perhaps more important than the factor of brightness alone.

Nature maintains a pretty even balance among these light variables. If we ignore the light conditions found on the desert, the beach, and snow fields where we find intensive brightness, the general landscape affords illumination, brightness, reflection-factors, and brightness-contrasts which are acceptable to the visual sense for the kind of seeing we do in the out-of-doors. The critical seeing task involved in reading printed word symbols, however, is not generally done under the conditions Nature has created. We perform this task, and it really is hard work, in a man-made environment which has not been created for this purpose. Up

to and including this date the major emphasis of those who are responsible for constructing schools, offices, factories, and other places where critical seeing takes up large portions of time has been on light. Lighting, which is the science and art of turning light into a constructive, usable energy for easy seeing, has been given very little attention.

The visual sense and the process of seeing were developed under the conditions Nature provides. Biologically, man moved indoors only yesterday and hence cannot expect to make a readjustment as major as creating entirely new standards for his visual apparatus in such a short time.

Let us look at a classroom where many critical visual tasks including reading printed word symbols are done for considerable lengths of time and see how we could set it up for seeing Nature's way.

In passing, I want you to know that I know that this paper has broadened out considerably and is now talking about lighting rather than just illumination in a foot candle sense. The factors in lighting we have been considering are so closely inter-related that one cannot speak of one without the other. And besides, Peter Spencer asked me over here and when I objected he said, "Oh come along and do the best you can. We need some one to fill up the program." I came and am doing the best I can and am certainly taking up some time. Anyone who wishes may go at anytime except Peter Spencer. He has to stay to the bitter end. Now back to the classroom.

The sources of light would be out of the normal field of vision. Natural light would be admitted from both sides of the classroom in order to have enough illumination in terms of footcandles and still have a fairly even distribution of brightness. The natural light would be controlled by a fixed device which would not permit the much greater brightness of the outside to be seen from the inside which, if permitted, would destroy the interior brightness distribution for the visual apparatus. A color scheme would be used which would be worked out on the basis of the reflection-factors of paint and thus the variable of brightness-contrasts could be controlled. The natural light so controlled and directed would be supplemented by artificial light from tungsten filament lamps. The fixtures holding these light globes would be dropped approximately four feet from the matte white ceiling and would be of the totally indirect type. These fixtures would be arranged so the whole ceiling would be evenly lit with approximately 3000 watts of light for a standard sized classroom.

We would have a room that would approximate natural conditions in all but one factor-- that of footcandle intensity. Instead of having the 500 footcandles of light found in the shade of the tree, we would have approximately 20 footcandles of light. However, if we controlled the other variables of brightness-- reflection-factor and brightness-contrasts-- we would not have to worry about the 20 footcandles of illumination. They would do for the present. Until we can get more reliable data on optimum intensities necessary for different work conditions, we can all busy ourselves

getting our seeing conditions up to the place where excessive brightness and brightness-contrasts have been eliminated. When that is done we can begin talking about higher levels of intensities.

When we turn to the consideration of reading printed word symbols, several other factors appear for consideration. These factors influence the visibility of any object.

The size of the type and the style of the type used in the reading material at hand is of major importance. Larger things of exactly the same color are easier to see than smaller things. The larger object reflects a larger amount of light to the eye and hence is more easily seen. There are several factors relating to type size which must be considered. There are economic limitations-- the matter of the number of letters included in a perceptual span-- and also the fact that the larger letters require more ocular muscle effort in reading them. Therefore, we can conclude that there is a definite point in the size of type after which increased size is a hindrance rather than a help in reading. The twelve-point type size has become quite common for use in books and, after the visual mechanism is fully developed, may be acceptable under proper seeing conditions. Eighteen and twenty-four point type are used for sight-saving reading materials, and again the other factors of seeing hold the answer to the appropriateness of this size for this work. Newspapers are generally printed in six or seven point type and the footcandle intensity necessary to make this form of reading is about double that necessary for easy reading of a well printed book. Due to the economics involved it is pretty difficult to do much about type size in reading materials. Of course, most of the newspapers, magazines, and books now written could say half as much in twice the type size now used and leave us all in better spirits and just as well informed.

Another factor in seeing related to the printed word symbol is the distance of the object from the eye. We need not go into a long discussion of this factor because of its obvious relationship to reading. It might be wise to mention, however, that arbitrarily setting a fixed distance as the best for holding printed material is not good practice. The best rule to follow in this regard is the one which names the natural reading distance as the one which results when the arms are bent at approximately a right angle. This rule then applied to each individual would regulate the actual distance in inches by the sketal structure of the person concerned.

Time is a factor in reading as well as in most other activities of life. Although light travels at the terrific speed of 186,000 miles per second, the visibility of an object--- type or anything else--- contains a time element. The time required for seeing cannot be broken down easily into measurements because time required for seeing must really be considered the reaction time of the individual under observation. Illumination is only one of the factors involved in reaction time. The other factors are too involved for consideration here. Luckiesh and Moss report experiments which indicate that the average fixation time is 0.15

seconds and that within certain limits, higher illumination levels are effective in decreasing the time required for seeing, thus permitting the eyes to operate with a greater factor of safety.

We have discussed the factor of brightness-contrasts in relation to general lighting both out and in doors. This factor also enters the picture when we consider the visibility of reading materials. The brightness-contrast of the type to the page upon which it is printed is the question at hand. There is considerable difference of opinion about this point. Perfect black against a perfect white is proposed by Nela Park engineers as giving the perfect brightness-contrast desired for printed materials. Light falling on a page printed in as near black and white as we can manufacture would be reflected to the eye--- about two per cent from the black type and about eighty per cent from the white paper. This condition would create a very good brightness-contrast and the material would be highly visible, all other factors being equally good.

At this point I would like to say just one word about brightness-contrasts of duplicated reading materials. All of you find it necessary to prepare reading materials by the duplicating process. Mimeographs--liquid-type duplicators-- gelatin rolls, and other kinds of devices are used to prepare this material. Examine these sheets you pass out to children and adults and expect them to read with facility. Elite type--imperfectly printed words-- ink colors running to light pastel tints--glossy paper-- deeply colored paper-- all these things are great factors in the readability of these materials. He who is without sin in this respect please stand and be honored.

The factors of size, distance from the eye, time, and brightness-contrast which we have just discussed all can be modified by proper lighting. In fact, control of the seeing environment is the one big compensating item which keeps our reading situation from being practically beyond our control.

One other variable we find in reading environments which has a definite relation to reading of any kind is noise. The data on the relation of good lighting to noise is not established well enough to place it in the same category as the factors we have just discussed. However, there is evidence which indicates that a well lighted classroom helps in the orderly arrangement and administration of that classroom whether such order and administration is a product of the teacher or of the class group. Short interest span due to fatigue, restlessness, unnecessary motion, squirming, etc., has a definite relationship to lighting conditions. Rainy-day schedules which shorten class periods and dismiss the children from school at an earlier hour than usual are not merely devices to allow children to reach the shelter of their own homes and thus achieve security from a storm. Rainy-day schedules are devices used by administrators to protect the capital investment of the school district. When the walls of your buildings begin to bulge with the tensions created within them because children cannot see well enough to carry on their regular activities; and when teachers begin to lose their customary sweetness of

disposition and with it the control of their groups; then it is time to send the children and the teachers home if you wish to save the furniture and in some cases the building itself. This is one variable that we as teachers can tell the engineers about! The lack of proper lighting is one of the very large factors influencing this kind of behavior.

The ability of the human being who is doing the reading depends upon such factors as intelligence, experience, reaction-time, concentration, stimulation, and fatigue, according to Luckiesh and Moss. I am not going to propose that proper lighting conditions arranged for the reader will overcome his individual lacks in any one of these variables. The thing I am going to propose, however, is that proper seeing conditions will help compensate for deficiencies in most of these variables and that the least we can do as people interested in the problem of teaching children and adults to read the printed word symbols is to consider seriously the place of adequate lighting as an integral part of our teaching techniques.

Health as a factor in reading the printed word symbol certainly cannot be denied. As we discussed the process of seeing earlier in this presentation we came to a fuller realization of just how intricately and completely this process of seeing is tied up with the whole bodily mechanism. The completeness of this tie-up can best be illustrated by the completeness of bodily fatigue after one has spent a long period of time using his visual sense under poor seeing conditions. We could go into every field in the total educational experience of mankind and relate health to his behavior in any or all of these fields of experience. This is no secret. There are very few people filling any capacity in the educational, business, industrial, or social worlds who would not readily admit that health is the prime factor in human behavior. Everyone seems to admit this fact but few there are who seem even remotely interested in doing anything about it, even for themselves, much less for humanity as a whole.

Good lighting as a factor in health is practically an unexplored field. There is considerable evidence though that the physical, mental, and emotional health of an individual is affected by lighting.

Probably it would be wise at this point to draw a distinction between vision and seeing, inasmuch as this distinction is necessary to a better understanding of the remainder of this presentation. Once upon a time an old friend dropped in on an old friend to spend a weekend. The host had a date for the Saturday night dance and volunteered to get a "blind date" for his friend. The girl friend arranged everything for the boys and when the foursome arrived in the bright lights of the hotel it became very obvious to all and sundry that the girl friend was a "vision" and the blind date was a "sight". Now if we tinker with the story a bit and reverse the characters to make them fit into our explanation of the difference between vision and sight we will have a good illustration. It should have turned out for our story that the "sight" was a much more desirable companion than the "vision". Who knows, maybe it did turn out that way. Sight is the end product of vision. It is vision with all the other psychological and emotional interpretations added to vision. Vision is

the sense-- the process that brings the world to the mind. Sight picks up the chain after the brain has actually completed the picture-making process and then translates this visual picture into behavior. One girl had everything the other had,only the more beautiful of the two had added a touch of eye-shadow, a whiff of Nuit de Paris, a drop of "Murine", a new shade of rouge, and the latest coiffure. All these embellishments taken by themselves don't amount to much but when they are added-- a dash here-- a spot there-- a big difference is readily apparent.

Light and lighting, as we have seen, are vital factors in vision. Vision, which brings us to the threshold of sight, makes sight also dependent upon lighting. Thus we could term lighting as a base factor in seeing.

Health as related to light and vision revolves about the physical side of the human mechanism. The one physical factor that has been measured most in this relationship is fatigue. We have seen or comprehended that the actual process of vision is accomplished to a large degree by muscular manipulation and wherever we have muscles at work we have fatigue entering as an issue of no mean importance.

The visual apparatus is a truly remarkable mechanism. Added to the many wonders we have examined we now must add another, namely, that of adaptability. Good lighting conditions are not necessary to vision or seeing, as we all know well. The visual mechanism continues to produce under practically every condition. It has no stopping point. Given the tiniest ray of light as a stimulus and away it goes fighting practically impossible odds to carry out its routine. This characteristic makes it very difficult for research to measure fatigues, strains, and defects which we know must exist. The process of seeing goes on at practically any odds. The visual mechanism works its level best under terrific handicaps and the body as a whole-- the eye structure in particular-- absorbs punishment without a murmur until some part of it collapses under total exhaustion and the Lions Club gives us a white cane. This fact is true of our whole bodily structure. It is very difficult to measure the small, contributing factors which keep building up and rarely do we become particularly alarmed until we experience a major breakdown.

What happens to us physically as a result of inadequate lighting is a very controversial question. For the sake of presenting to you some idea of the research done in this field I intend to summarize briefly the results of experiments carried on by Luckiesh and Moss in their effort to establish some physiological effects of seeing. There is much literature that seriously questions some of these conclusions.

1. "Nervous muscular tension commonly causes a tightening of certain muscles. . Muscular energy is often wasted as a result of strain or fatigue which originates remotely from the place where it may manifest itself. An automobile driver commonly grips the steering-wheel more tightly at night on a poorly-lighted street than on a well-lighted one. In this case, an inadequacy in conditions for seeing is manifested in tenseness and in the useless expenditure of muscular effort." Reading experiments

were set up and it was concluded that "the indicated nervous muscular tension, developed incidental to reading, decreased from 63.2 grams to 43.0 grams as the illumination was increased from 1 to 100 footcandles."

2. Visual effort and heart-rate was investigated in an experiment using seven male subjects in good health and with normal or near-normal vision. All the variables involved in the experiment were controlled as well as possible. The results as announced by Luckiesh and Moss are that (1) "the heart-rate progressively decreased as the duration of the visual task increased and-- (2) that this decrement in heart-rate was much greater under one footcandle than it was under 100 footcandles. It is particularly significant that all subjects show such decrements in heart-rate while reading." The actual decrease under one footcandle was ten per cent and under 100 footcandles was two per cent. The reading matter chosen for this experiment was "The Outline of History" by H. G. Wells. I am sure that just the book alone would have sent me down several per - cent.

3. The Eyelid Reflex in Critical Seeing is simply a <u>blink</u> to us. Luckiesh and Moss say, "the conclusions of Ponder and Kennedy that the"rate of blinking is closely related to the mental tension of the subject at the time and that the movements constitute a kind of relief mechanism whereby nervous energy, otherwise unutilized, passes into a highly facilitated path" suggests the possibility that this phenomenon may serve as a measure of human energy expended in critical seeing. In fact, Litinsky has proposed the recording of winking as a method of study of ocular fatigue in children resulting from reading." Again carefully planned and administered experiments were conducted and the following conclusions were reached-- "Fatigue increases with the duration of the task and the rate of blinking is a function of the duration of the task and a measure of the fatigue induced by performing the task. Without exception the subjects blinked at a faster rate at the end of the test period than at the beginning." A summary of the test shows that the frequency of blinking after reading for one hour was 100 per cent under one footcandle, 77 per cent under ten footcandles and 65 percent under 100 footcandles.

4. Another experiment conducted to measure fatigue concerned itself with the decrease in convergence reserve of ocular muscles after reading for one hour. The general assumption made by Luckiesh and Moss is that "muscular fatigue produced by reading, as indicated by changes in the tonicity of the interal recti muscles, is approximately three times as severe after reading one hour under one footcandle as it is after an hour's reading of the same printed matter under 100 footcandles." The brief summary shows that the decrease in convergence reserve of ocular muscles after reading for one hour is 23 per cent decrease under one footcandle and only seven per cent under 100 footcandles.

The implications implied by these data are obvious. Since the recorded physical changes occurred in normal, healthy subjects, what greater and more devastating effects would be felt by less normal, less healthy humans who do their daily tasks not for an hour at a time but for

days, months, and years on end? It certainly appears reasonable to assume that seeing conditions have a positive correlation with the general physical health of the human mechanism.

One could not mention the subject of health these days without putting in a plug for some kind of vitamin. Some people have grown suspicious that there are more fish livers than fish. If you are one of them the good old sun seems to have an endless supply of the "sunshine" vitamin D. Solar energy, as recorded in the ultra violet band of the spectrum, has been associated with vitamin D and no reasonable doubt now exists that this vital element of health lies hidden from human sight in the camouflage of every sunbeam. There is one small detail concerning sunlight and vitamins that we should clear up. Sunshine in its natural lair-- out in the great out-doors -- is a health element. Sunshine coming in through glassed windows to a home or schoolroom has lost its Florence Nightingale touch. There is no window glass manufactured which does not absorb the ultraviolet rays or the vitamin carrying rays of the sun. Sunlight through a glass window undoubtedly has a stimulating mental effect on one, but definitely no vitamins.

Vitamin A also has a definite relation to vision. It has been established that there is a definite relationship existing between the lack of vitamin A -- night-blindness and visual purple. Carrots are the food that give us some supply of vitamin A. If you wish to take a long drive at night lunch for a few days on raw carrots and if you have a tendency toward night-blindness, old vitamin A will be on hand to help you home.

The field of ultraviolet radiation is a very young one. Much laboratory research has been done but very few devices have been made available for public use for health purposes. The reason for this is very obvious when one considers the extreme physical hazard of playing with death-rays. Careless treatment of ultraviolet radiation by our authoritarian public would soon have thousands lying end to end-- in morgues. One of the latest gadget ultraviolet sources that has been handed the public is the refrigerator lamp which is supposed to keep that great American mecca free from germs, odors, etc. Most of the bugs that lamp kills die from sheer exhaustion. The light keeps them awake and working twenty-four hours each day and we have seen what fatigue will do. However, that harmles little gadget is the forerunner of great things to come in the ultraviolet field and health. When an effective refrigerator unit is developed for public use you will be able to buy the toughest piece of steak you can find-- place it under your lamp for a few minutes and have a steak so tender you can "gum it". Undoubtedly this field will be developed so we can install health lamps in our schools, homes, offices, and factories which serve as preventative and curative devices in the field of human welfare. However, that day is yet to come.

The other end of the spectrum holds great promise in its band of infra-red. This energy source is now used widely for heating purposes. Commercially it now has wide use in factories for drying all kinds of surfaces. The one big feature about its drying action is that it works

from the inside out-- first drying the paint next to the metal body of a car, for example, and coming back through the material to the surface, drying as it goes. Within a short time our stoves used for cooking will be heated with infra-red units. This business of heating up through the bottom of foods-- taking long periods of time to get the inside of foods cooked in order to save the outside from burning, is a bit old-fashioned and will pass. The use of these lamps for heating for health purposes is well known. The application to the health aspects of reading printed word symbols is a matter for future development.

We have come to regard light in the role of a stimulus in the process of sight. We have applied this stimulus to visibility and to health in various ways and now come to the consideration of light as a stimulus to esthetic reaction. This phase really is the most difficult of all to make pronouncements about. Each individual's expression and appreciation , as well as his feeling, of beauty are variables which are hard to measure accurately. Very little actual research has been done relating light to esthetics, yet the two are inseparable in so far as the esthetic experiences dependent upon the visual apparatus are concerned.

We recognize that an esthetic sense or taste would be a matter of degree for each member of a class group. Just as we in this room could be readily divided into small groups and placed on sections of a sliding scale of esthetic sensibility. Some people live in absolute disregard of esthetic values while others could not live at all without the esthetic stimulants they take in varying doses each day. Lack of appreciation often comes from ignorance. If we are not given the opportunity to experience beauty in her many forms we may not be able to recognize her from the beast.

Someone has classified light as a "mood-conditioner." If we stop for a moment to recall the many experiences we have had which would verify light as a definite "mood-conditioner", we could all agree that we have ourselves, at one time or another, been "conditioned" by this means. How do your moods differ when you awaken in the morning with the sunlight streaming in through your bedroom window as compared with a dark morning with a tinge of smudge in the air? Now some people would rush to the window when they see the sunlight and quickly pull the blind because the rug might fade. Or when the smudge appears they quickly pull the window because the smudge would ruin the curtains. Beyond the rug and the curtains they have no reaction. Such people have no souls. Esthetically they are dead.

That time you walked by a modern cocktail lounge, what kind of lighting did you observe? I am told that people who patronize such places do so to relax, and what kind of lighting do we find? You notice next time.

The theatre long has conditioned the audience and the actors by lighting effects, and the motion picture industry is symbolized by the cry, "Lights-- camera-- action." The whole entertainment world relies on

light for its main prop and mood conditioning as related to the esthetic sense as its chief resource. Someday churches will learn to use light.

What kind of mood do we want children and teachers to be in while living in a classroom? Whatever mood you choose you can get by using light and color. What kind of esthetic feeling do we wish to stimulate by our classroom environments? I suggest a feeling of space, of order, of cleanliness, of cheerfulness, of action, of work, of aliveness, of relaxation, of beauty, of pride, of belonging. All of these feelings can be stimulated by light and color. Naturally other elements are desirable to increase the degree of this stimulation.

A color-scheme should be worked out which is in keeping with the furniture, equipment, exposure, and light sources at hand. Your consideration is the light intensities with which you have to work. If there is light in abundance that is well controlled and distributed you have a rather wide choice of wall colors. You can cool the room with blue greens; subdue the room with blues, depress the room with violets; excite the room with red and orange; or cheer the room with yellows. If you haven't light enough to play with and you wish to have a bright and cheerful room then the hues of yellow saturated with green or orange are probably the best bet. Yellow-green is the color at the peak of the luminosity curve and carries a reflection-factor of between 50 and 75 per cent. Large wall areas of the colors with yellow as a dominant base are very pleasing to look at as well as the brightest for good light distribution and contrast. The wood-work color should not offer too great a contrast to your wall areas. Certainly they should lean toward the lighter and more cheerful tints. The problem of maintenance for these lighter colors on woodwork can be solved by using an oil-stain-based color and covering it with shellac and flat varnish. Finger stains are easily wiped from this surface and the dirt never gets into the pigments of the paint or stain. Floors should be kept as light as possible and the ceiling flat white. All shiny surfaces should be avoided to prevent specular reflection of light.

No one can have a feeling of well-being if they are crowded. Space is an essential to normal growth and development. The feeling of space which leaves one with an esthetic sense of good proportion, line, and form can be gained to a large extent by good lighting. Of course, your furniture arrangement and pupil load are physical conditions which deny psychological manipulation. All other things being equal, however, you will find a well lighted room actually is larger both psychologically and physically. It is larger physically because those dark corners and niches become usable work areas when well lighted. Usable floor-space stretches by the square foot when shadows and dark corners are dispelled.

With light comes order. There is something about a well-lighted room that demands careful arrangement. There are no dark corners to stand odds and ends in-- spare maps, scraps of lumber, etc. Cleanliness and order go hand in hand and light fosters both. A few extra cupboards for storage help too.

It is said that some modern torture chambers are simply ordinary rooms with colored designs on the walls and a tremendous direct light intensity. A comparatively short time in a room of this kind sends a man raving mad. He simply cannot relax. Since a proper rhythm of activity and rest is deemed necessary for the proper growth and development of children, a classroom should provide conditions which make both easily possible.

The one condition which permits both activity and rest in a classroom is good brightness-contrast. No extremely bright spots should be visible in the classroom because the eye tends to fixate on the brightest light source. Relaxation is not possible while the eyes are fixated on a glare spot. Light, then conditions the mood of relaxation and relaxation is a condition that fosters esthetic contemplation as well as mischief.

Beauty is a composite of elements, Light and color certainly are major items in her make up. A classroom can be beautiful-- not perhaps in the sense of a string of perfectly-matched pearls on black velvet, but in a less sophisticated, child-like way. Too often we bring our more worldly, narrow, adult standards with us into the classroom and provide esthetic experiences for children against those standards. That is why we must know more about children and the things which are important to them. We all realize how necessary a smartly-dressed teacher is to the esthetic tone of a classroom. Sometimes that teacher is the only esthetic stimulus in the total environment. Such a responsibility does not need to be assumed by any teacher in a well-lighted classroom that has provided additional stimuli for this sadly neglected phase of a child's experience.

To these feelings which we are stimulating by space, order, cleanliness, cheerfulness, relaxation, and beauty, will be added a sense of pride and belongingness. If you succeed in arousing the comforting sensations which accompany these feelings, you have provided a child an environment of which he is proud and anxious to be a part. Maybe success of this nature through the use of light is light's greatest contribution to helping a child to read printed word symbols. Perhaps this aliveness-- this freedom to work easily all over the room-- this cheerfulness reflected from the very walls-- this space without shoving for it-- this order, cleanliness, and neatness which makes messy desks and floors seem out of taste-- maybe these factors create an awareness, readiness, and interest that make for a new approach to his schoolroom life. Science cannot prove or disprove this possibility. Maybe you can unless you are the kind of person who thinks of the rug when the sun shines.

Those of us working in the field of education have to do a lot of work on faith. Sometimes we grow quite discouraged because the results of our labors are often very slow in materializing. We are dealing with growth-- imperceptable and often unmeasurable growth. Dr. Herbert Stolz once said that humans live too long. He meant this statement in the light of recording results in growth and development patterns of boys and

girls. By the time we grow and develop ourselves to the place we are in a position to help guide the growth and development of others, we are too far along in our own life cycle to get the long range perspective one needs to be really smugly content with our guidance techniques. We are really studying our contemporaries and have the opportunity of observing only one full set of experimental subjects through the long and varied stages of growth. The fields of research that can use guinea-pigs for experimental subjects have the chance to observe a great many generations of them and thus can try many times over if at first they don't succeed.

The application of the science of seeing, however, offers all of us an opportunity to feel that we have made a genuine contribution to the general welfare of the lives we touch in our daily work. Here is a chance to bite into a real problem that does not need to wait for the slow and extremely variable process of maturation to run its course before true evidence of help or hinderance can be gathered. We could safely sum up this discussion with the general statement that no matter who you are, what you do, or where you work, you can apply just a few of the very simple suggestions I intend to make and by so doing make a definite contribution to your own welfare as well as to the well-being of those who look to you for guidance. There would be no point at all in your attendance at these sessions unless you carry away with you definite plans of action-- action in your own world of work, action planned as the result of the experiences you are having this summer. We learn only by the results of our experiences and not because of them.

This presentation has not been made as an exact, detailed, all-inclusive scientific treatise. I am not capable of such an offering nor do I believe that such an attack on this problem would be extremely profitable to any of us. The only valid reason for our spending this short time together is to relate to you some of the general findings in the field of lighting and to help you-- and in so doing help myself-- to an interpretation of these findings in your own, individual work and play lives. Unless you feel the same way about it, we would better have spent our time working over a racing form selecting our Hollywood Park picks for tomorrow.

For the concluding few moments of this talk I need your help. I want each one of you to establish a mental picture of a classroom in which you work or a room of any kind where you spend time in critical seeing tasks. Most of us are in some way concerned with classrooms and so we will use that unit-- your own classroom-- as a guide. The first big question we will consider is brightness-contrasts. Let us look at your window area for a moment. Five or six large windows along the one side of the room admit all the natural light available. Wide mullions or roof supports separate each window from the one beside it. No direct sunlight is striking the windows, so whatever kind of shades you have are in a position to let in all the light you can. You may not know much about lighting but long observation in the classroom has made it apparent that the inside rows of desks do not receive as much light as do the ones next

to the windows. Actually, the children sitting near the windows are receiving forty or fifty times as much light on their work as are the children sifting near the inside wall. This additional amount of light may be a help or it may be a hindrance to the students. As the children on the inside rows look up from their work and out the window their visual apparatus adjusts from a brightness of about three to six foot-lamberts to approximately three to six thousand foot-lamberts. As they look back at their critical task often an after-image caused by the sudden and extreme brightness holds over on the retina of the eye and he can see nothing or a splotch of color on his work for a second. You can just imagine the frantic adjustments the visual mechanism makes each time that cycle takes place. When the child in question begins to fidget and pokes his neighbor you spend your energy writing his name on the blackboard instead of pulling the blind. Of course if you did pull the blind and turn on the artificial light that is supplied by two or four enclosing globe fixtures attached to the ceiling, and the supervisor, principal, or superintendent happened in, he probably would make a note of the heresy you had committed by burning the lights on a bright, sunshiny day and use the evidence against you when he tries to dismiss you for mental incompetency.

What to do about it? What we want to do about it is to cut down the bright-contrasts within the normal range of vision of the child to reasonable limits. These limits are a matter of some difference of opinion. Dr. Leland Brown of Stanford University recently suggested 100 to 1 as being a desirable ratio. Dr. Frank Moss of Mela Park sets 10 to 1 as being ideal. If you succeed in cutting this brightness-contrast to 500 to 1 you probably will be improving the visibility in your classroom 1000 per cent. Since control of natural light under these circumstances is a very difficult matter, let us begin reducing the brightness-contrasts in our classroom by doing something with those walls and walls of blackboard. We must lighten the interior of our classrooms as a first practical move. Do you use all that blackboard area? If not or if so, cover some of it up with light brown wrapping paper and let the children cover it with a nice landscape mural in keeping with the area you are exploring in social studies. A mural gives the impression to visitors that something constructive is going on in the room, and then too it will make a good exhibit for open-house. It might be good enough to be exhibited at the County Fair but at all odds, it will cover up some blackboard and, if you can work a little perspective into it-- you know, after school when the youngsters have gone home-- it will serve to relax a bit of the eye-muscle tenseness of those who look at it.

Next, we must do some painting. Work out a color scheme that takes into consideration what you have to work with and then apply paint with a high reflection-factor and pleasing visual effect. The ceiling will do well with a flat white surface, preferably casein paint because of its high reflection-factor, lower cost, flat finish, and ease of application. Don't forget the woodwork. Schoolrooms have always been painted for the janitor rather than for the children. Light-colored woodwork does require more maintenance. If the janitor can't keep it clean, after all, it's the

children's classroom. Let them help a bit.

Those light fixtures may be of the direct type. A glass bowl hung on a collar over a 100 watt light globe. Two down the middle or four in the corners make small replicas of the sun. Their surface brightness is too high if they are giving any light at all and they must be replaced with as inconspicuous a light source as possible. Indirect fixtures aren't so terribly expensive and now that the silver-bowl lamp is being developed for reasonable efficiency an easily maintained fixture of the concentric ring type can be purchased reasonably. These indirect light sources must be dropped far enough from the ceiling so they will not create an excessive ceiling brightness. You will need four or six of them for a classroom. Four will do if your room is not more than 24 x 30 feet in dimensions. Larger rooms require more fixtures in order to maintain an even distribution of light.

Now for those windows. The only way you can hope for good lighting by using only natural light is to have windows on both sides of your room. The classrooms we are working on now, your mental ones, I mean, are probably constructed of reenforced concrete or need that entire inside wall to carry the structural load. Bi-lateral lighting then becomes an impractical solution to your problem. We will have to work on controlling the natural light from one side only. If you have Venetian blinds they should be left dropped full length and adjusted so that all the light coming through them is reflected to the white ceiling and there diffused over the room. The slats should be adjusted so that as little sky as possible is in the visual field of the students. Your top light is the valuable light for creating higher visibility within the classroom-- use it. If you have roller shades that pull down from the top, reverse them. Have them anchored on the bottom of the window if possible and pull them up instead of down. Maybe your roller shades are divided in the middle and one section operates each way. This arrangement is superior to a single-piece blind because it gives you a better chance to control the light.

But, I hear the murmur, what about the cost? Oh let's say roughly seventy-five dollars per classroom or one-hundred dollars if some rewiring has to be done. That would be your cost chargeable to maintenance and capital outlay. Operation costs due to excessive utility rates would jump from the probable present yearly A.D. A. cost of twenty-cents to maybe seventy-five cents per A.D.A. per year. The average cost, excluding capital outlay, of operating the schools in Los Angeles County for the fiscal year 1939-40 was approximately $120.00 per A.D.A. There are no available figures on the part of this $120.00 that was used for providing good lighting in the schools but a fair estimate would not exceed fifty-cents per A.D.A. It is generally accepted that about 85 per cent of what we know is learned through the visual sense. Now, even in spite of modern classroom techniques, it appears a trifle out of line to me to accept that we can afford to spend only fifty-cents out of $120.00 to provide facilities that are as important to 85 per cent of a child's experiences as is adequate lighting. That is, of course, a per-

sonal opinion. You will have to form your own.

The other day I saw a letter from a lighting engineer connected with the Hydro-Electric Power Commission of Ontario, Canada. In this letter the gentleman stated that part of the financial support for the schools of Ontario is dependent upon the kind of classroom lighting the school has installed. I saw pictures of some of these classrooms and along with their pine floors, wood-stove and platform for the teacher's desk one could see six unit lighting jobs with a special battery of directional lights for the blackboard area. Someone must have found that good lighting is a sound financial investment for schools.

I made a tour about a year ago of recently constructed schools up as far as San Francisco. Henry Wright, an architect, and Foster Sampson, president of the Southern Section of the Illuminating Engineers Society, accompanied me. We were surveying the natural and artificial light sources in a group of schools recommended for their lighting installations. What we found was light and lots of it, but very little lighting. Every one of the schools had been built to produce maximum footcandle intensities in the classrooms and no consideration had been given to the important angle of brightness-contrasts. All but two of the schools had installed a directional lens direct type fixture to provide the artificial light.These fixtures in one instance produced fourteen footcandles of illumination and 5000 footlamberts of brightness.

In conclusion I wish to submit some statements to you. First, all the available literature points to the belief that lighting is a factor in reading the printed word symbol. Second, the three aspects of lighting we have considered tonight, namely, visibility, health, and esthetic aspects are important in our consideration of vital elements in classroom environment. Third, lighting as a factor in reading-- reading in its broadest concept-- in its relation to total human behavior-- must be considered in its proper importance if we are to solve many of the problems facing us in the total reading field. Fourth, you have been a swell audience and I appreciate the privilege of talking with you.

OUTLINE OF THE EVOLUTION OF COMMUNICATION

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Two potatoes cannot communicate. The reason they cannot is because they have no nervous system. Therefore in order to outline the evolution of communication (and in a treatise as brief as this, 'the bare phrase outline' is particularly appropriate) it is necessary at the same time to trace the evolution of the nervous system also in barest outline.

At the start some cell or glob of protoplasm was lying in the water, a ray of light was deflected in its direction, and where it struck the cell it set up an irritation at the point of contact which sent progressively decreasing waves through the cell along an axis of transmission. This established in the cell a polarity with a negative pole where the irritation started and a positive pole at the other end. This is the beginning of the tail-end and head-end in any organism. It is the start of perceptors, receptors, etc., or in other words it is the start of communication. Nature has sought to develop better and better methods of communication, and has succeeded.

One of the general laws affirmed by biology is that the development of the individual repeats the development of the race; this same evolution repeats in the nervous system. Thus we examine primitive forms of life such as the unicellular, and discuss the nature of living tissue because the human nervous system is a high specialization of living tissue.

We find the beginnings of communication in the simple unicellular animal. Lower forms are found and can respond in any direction. Higher forms less amorphous, become elongated, have a head and tail, as in the paramecium, which live in flowing water and have 'heads' permanently electro-negative. This polarity runs through the higher forms, and thus structure appears.

The pheonomena of specialization involves (1) irritability, (2)conductivity, (3) responsibility. In the hydra all three involved functions are found in the same cell or cells. The next step in specialization is for each of the three functions to become differentiated (structuralized) in special cells, (1) receptors, (2) conductors, and (3) effectors, respectively. This is an illustration of structuralization as a result of experience,- that is 'experience' at all levels. A further step is made when there is a specialization of each class, as in the development of eyes, ears, etc., until in man there are some fifty different receptors; and conductors become fibers, nerves, etc.; and effectors become complicated into muscles. In the lower forms of animal-life possessing a nerve-net, the kind of reaction to effectors is general and differentiations are either not fine or are non-existent.

There are many types of receptors which are designed to react to

specific happenings in the environment. One type will pick up radiant energy, another mechanical sound waves, another slight changes in pressure, others temperature, smell, taste, color, etc., etc. Light and heat waves or pressure, change the physico-chemical make-up of these receptors. Beyond these receptors we have neurons and a system of synapses.

We have neurons of different orders. When a toe aches, neurons of the first order carry the impulse to the spinal cord. From there, neurons of the second and third orders carry it into the cerebellum, medulla, thalamus, etc.

Now, although higher levels develop without losing lower levels, there is a gradual shifting of function from lower levels to higher, which is called encephalization, or the 'law of hierarchy.' The turmoil of adolescence by the way is one example of the taking over by the cortex of functions formerly done by the di-encephalon. (Adolescence could be a smooth process. It is only made rough and stormy in civilization.) Encephalization results in modification of function; so it is not safe to generalize on human behavior because of animal behavior.

Because of encephalization these levels work as a hierarchy- the higher levels controlling the lower ones. The number of neurons becomes increasingly great in compound ration as the nervous system elaborates. The number of possible inter-connections between the neurons in the cortex for instance is greater than the calculated number of atoms in the sidereal universe. This gives a vague concept of to what lengths the elaboration of the nervous system and hence communication have gone.

Because the nerve impulse has been found to have a finite velocity, order can be established. When one has order, one can have relations.

Structurally the next step in evolution is to the multicellular, the community or society of single cells, as for example in the hydra. And here appears the interesting phenomena of specialization. The cilia-bearing cells at the oral aperture of the hydra are more sensitive and can close the apterture against alien substance or stimulate the flow of water into the organism as needed. (Some stubborn people have the habit of closing their mouths tight, thus exhibiting the reaction of a sponge, which though very useful at the level of a sponge is not so in humans).

All protoplasm shows irritability, conductivity, and reactivity, and communicates and is communicated to by these means. Undifferentiated blobs of protoplasm therefore become structuralized into morphological entities, such as eyes, ears, heart, lungs, etc.

There are three types of nervous system:

(1) A diffuse nerve net. Only when there are many cells and close together, are nets of communication necessary. The same is true of highly populated areas of people.

(2) Vegetative system. This is a net of nerves such as in the digestive

system. It is this which is functioning when we get 'sick to our stomach'

(3) The central nervous system. This is a cord with a ganglion at the head. Organisms become organized like iron filings around a magnet, and the cells group themselves together in the same orientation with a head-end and a tail-end to perform some function. These poles are established because there is a greater frequency of irritation at one end. In this way a nervous system evolves, with a head-end etc. which supersedes the diffuse nerve net.

In the lower type of organisms, a nervous system was evolved because the organisms were concerned with the pursuit of prey, and swimming. The higher we go in evolution, the more complex the head-end development becomes, until in the higher animals and then man, the head develops.

We must jump a long way up the scale from general responsiveness to a specialized(centralized)nervous system, as for example in the earthworm. An earthworm is segmented, with a head and ganglia in the head with coordinating, directing functions. More highly evolved than the earthworm are the warm-blooded animals which have a spinal cord and at the head-end a brain stem, consisting of the medulla oblongata, pons, cerebellum and mid-brain.

Later was developed the interbrain (di-encephalon or thalamic region) with thalamus, sub-thalamus, epi-thalamus, hypo-thalamus, etc. All this in size is like a fist in a football compared to the human cortex. Making due allowance for the process of encephalization, we may say in general that higher organisms use lower brain parts as the lower forms do.

In the medulla is located the 'exchange', nuclei (in ganglia), and in animals without a cortex we find quick reactivity, as in birds and reptiles well-adapted to their environment.

In the cortex is the center for delayed reactions. For example, compare the behavior of a cobra and a mongoose (or cat) when fighting, and compare a cat's reactions when shut off from birds by glass, with those of a carp shut off from minnows by glass. The cat learns quickly because of its cortex, while the carp hits its nose against the glass and 'learns' slowly by trial and error and if the glass is removed cannot 'unlearn' readily as the cat can.

The relation between the di-encephalon and the cortex holds the key to the problem of balance and adaptation. The human cortex is nearly three times as large as that of the next highest ape. By means of the cortex, man has acquired the ability to store his symbolisms, which causes the cultural matrix into which he is born and to which he has to adapt. There is a vast increase in the number of association patterns in the human brain over those in the monkey's brain, but the human brain hasn't so many more neurons.

The old brain or thalamic region (or more correctly the di-encepha-

lon). consists of two main parts:

(1) The thalamus, which is a sensory receiving station.

(2) Surrounding the thalamus is the old motor brain, or the Lenticulo-striate nuclei.

The highest development of the old brain is in birds and reptiles. In the evolutionary scale above them, the cortex starts to appear. The old brain is less than half the size of the fist. In the cortex a new level starts to develop. The function of the lower levels is altered by the action of the higher levels.

We have all had shocks and hurts because the messages received by our perceptors were not like reality. 'Nervous breakdowns' are results of lack of predictability or correct communication. These 'breakdowns' are a series of shocks, or realities, which were not predicted or were contrary to our expectation.

The ideals we have were produced in us by the culture system into which we were born. In most cases these edicts were not based on facts, just as a wrong map may show a flat country where really it is a rocky, canyony, peaky country. We all tend to expect far more than we actually ever get. If we are going to avoid much agitation, maladjustment, and even danger, we must have proper predictability,- in other words accurate communication. This depends upon learning to evaluate the many characteristics which we formerly left out. The maps by which our parents travelled were probably useful to them under the conditions under which they were living, but more likely than not will put us on the rocks.

Our tendency to treat words as reality may be called reification or objectification. In the past we have reified the words 'judgment', 'will power', 'unconscious', etc. Also heat was considered a substance for generations, and we made the word 'heat' a substantive. Heat is really a movement of molecules and is not a substance. There is no heat in a redhot iron at the sub-microscopic or atomic level. A dementia praecox patient often reacts to words and thoughts as if they were realities.

As I have said, the brain, our principal organ for communication, is not all one organ like the liver. We have a number of brains inherited from our ancestors down the long line of evolution, which have been developing over many millions of years. During this progression, the brain of this animal has been modified, the brain of that one enlarged, and a sense of smell has been developed here and one of sight there, etc. etc. Every human skull contains the record of the brain's evolution from the worm, fish, frog, bird, dog, horse, ape, etc. When we dodge a blow it is a prehistoric animal's legacy to us which is functioning; when we fight it is a bit of brain inherited from our jungle forbears which springs into action. It is with a nervous and muscular equipment similar to that of the fish and bird that we digest our food; it is with the equipment inherited from the lizard and alligator that we blink involuntarily; etc, and so on.

But it is the interaction of two out of the many brains in our cranium with which we are chiefly concerned. One is the thalamic region or di-encephalon and the other is the cortex which is like a cap on the head of a cane. There are pathways or cables which connect the thalamic region and the frontal association areas behind the forehead.

The thalamic region is so very old in its history that every living thing from the angle worm up possesses one. This is the principal source of impulses, feelings, and emotions. It is to the thalamic region that the nerves of sight, hearing, smell, touch, etc. bring their messages. It is the central office of our nerve telephone system- where all the impressions and impulses are sent for sorting and redistribution. The thalamic region is also the bridge between inside-the-skin and outside-the-skin. It enables the mind to register effectively whatever it sees or touches,etc., outside its skin such as a like or dislike, etc. It is also sensitive to 'thoughts', 'notions,' 'memories', etc. reaching it from higher nervous centers within, and colors them with feeling, and emotions when they are expressed without. A potato which has no nervous system can be kicked or shouted at or jarred, but can neither know nor feel what happens either inside or outside the skin. This thalamic region is incapable of thinking or imagining, yet no nervous impulse set up by what we see, hear, feel, touch, taste, or smell, outside our skin can reach or leave the brain without passing through it. It is the center of all communication as far as each individual is concerned. Though it cannot think, it colors thinking.

With only a thalamic region we would burn with anger at the least irritation, bristle with hate, shrink with fear, and be ferocious cavemen in our love-making. The crack of a twig, or sound of an animal would pull the thalamic trigger and fire a tantrum of rage, a wave of fear and cruelty. A chicken is forever hopping, flying, fighting, twittering, feeding, courting, preening, only because its brain is largely thalamic and its thalamic region has no governing board of directors, or cortex, to modify and control its action.

Fowls and reptiles are the highest development of life which have fully developed thalamic regions, but very little, if any, cortexes. Animals higher up the scale than the chicken and the snake have greater amounts of cortex.

With our cortex we are enabled to recognize finer gradations, nuances, shades, etc., etc. We 'think' with it. Our powers of judgment and discrimination are located here.

For sane thinking and clear communication an impulse should come from the outside and pass through the thalamic region, then be 'filtered through the cortex' where it may be modified and analyzed, then back to the thalamic region before action takes place. If this is done, the reaction is 'safest' for the individual. He is most likely to survive under these circumstances. In temper tantrums - anger, fear, depressions, and such reactions- based almost entirely upon 'feelings' and 'emotions' - the impulse

has, for the most part, circled directly through the thalamic ('emotional') region of the brain and out again and produced a response, without having been 'filtered through the cortex' where it would have been 'thought about' and modified. When people are maladjusted, in any respect. it is usually because their impulses are for the most part short-circuited through the thalamus, and the modifications which should take place in the cortex do not have a chance to operate.

It is because of the cortex that we have the power to speak and communicate with other humans by means of words and other symbols. In fact, if the human had not developed a cortex, he could not have built this civilization, nor could he have survived in competition with animals many times his size or power. He also could not have invented symbols.

In order to understand some of the gross differences between the functions of the thalamic and cortical regions, here is an illustration. In one laboratory, a monkey was trained to drive a small automobile. He was a clever monkey, and he drove well. He learned that when the red signal showed, he must stop; and when the green signal appeared, he must go. But because monkeys as a class have much less cortex and consequently less discrimination than humans, who use these signals adeptly, the experimenters found that when he saw the red signal he crammed on the brakes and stopped suddenly. He might be 300 yards back of a corner, or he might be in the middle of an intersection; but under either circumstance, he stopped. When the green signal came on, he put on the gas; it would have made no difference if there were a baby or an old woman or a truck in the road. Because his cortex is inadequate for symbols devised by and for humans, he hasn't sufficient discrimination to be flexible in his reactions to the 'stop' and 'go' signal.

The human being also reacts to the red signal. He interprets it as 'I must stop,' but because of his discriminatory powers located in the cortex, if he is in the middle of the intersection, he thinks, 'This is no place to stop. I may get hit or block traffic'. So he puts on the gas and pulls out of the way. The next place where there are stop signals he may handle his car quite differently, according to circumstances. The cortical region of the nervous system makes one flexible and adaptable to changing conditions. The human has nearly three times as much cortex as the ape which is next highest in the evolutionary scale.

An example of the difference between the thalamus and the cortex is illustrated in Kipling's 'Rikki-Tikki-Tavi'. The cobra having no cortex, when he sees a defiant mongoose, has no choice butto strike. The mongoose, with a small cortex, delays his reaction and jumps aside. The cobra repeatedly strikes, the force gets less and less and less and the strikes get slower and slower until they get so weak that the mongoose jumps on the cobra's neck and breaks it. This shows clearly how a small animal with a little cortex can more than compete with a much more powerful animal and can survive even though the balance of strength and size are much against him- solely because of the cortex.

Another illustration- when I was a small lad I used to catch bull-

frogs for their legs by putting red flannel on a hook. Bull-frogs seem to have to jump at red flannel. I caught a large frog who swallowed the hook. In removing it, the frog was badly torn. Just as I got the hook out he slipped from my hands back into the pool. I put the red flannel and hook back into the water and he jumped at it and was caught again in spite of his painful former experience. Frogs, having no cortex, have no 'judgment.'

The cortex may also be called the organ of speech, as it is because of its development that we not only have evolved as humans; but also have been able to manufacture words, numbers, musical notes, paintings, architecture, and all the other useful symbols, or means of communication.

It is the frontal cortex that makes man the creator of music, the inventor, the scientist, philosopher, yet with only a cortex we couldn't exist. If we could, we would be as unemotional as a typewriter. We would reason without sensation. We would never 'cuss, coo, or cry'; no sobs at the death of intimates, no heart-throbs at the sight of the moon, no shivers or hisses when we saw the villain. That's the trouble with some of our Ph.D's. Their frontal lobes are over-developed and the thalamic region is repressed and not functioning as fully as it should for the Ph.D's comfort or that of those about him.

Emotion and reason have to be balanced in order for man to survive. Not so with animals. The thalamic region and cortex must be used together to obtain that fine balance. 'Another highball' or 'piece of candy', requests the thalamic region. 'I have to drive home' or 'I'll gain a pound' responds the cortex. The thrill of speeding is a thalamic reaction. Fear of the motor cop is cortical. The so-called dead-pan is a cortical creature. Gracie Allen is thalamic,- in her expression at least. In rage, love, hate, yearnings, and cravings the thalamic region upsets our internal poise. It takes the prompt assertion of authority by the cortex to restore this poise and keep us out of trouble.

Conscious experience is a changing succession of drives, judgments, choices, impulses, ceaselessly trying to get and keep in balance. Life, if possible without a thalamic region, would be dull, colorless, cold, austere.

The cortex and thalamic region are connected by cables of nerves called association fibers. The impulses should flow back and forth over these cables. In schizophrenia these two areas instead of functioning together and modifying each other seem to act quite separately,-sometimes one, and sometimes the other- Dr. Jekyll and Mr. Hyde.

The frontal cortex can be called the organ of speech and symbols, or the organ of verbal communication which represents by far the largest proportion of our inter-communication. The Bible was written many hundreds of years ago. Man by use of letters, words,(which are symbols) is able to read and re-live what happened at that time although the authors are long dead. In other words the ancients can communicate with us by use of these symbols. The music of a Beethoven or a Bach, which has been

transmitted down the ages by the use of symbols is as alive today as it was when it was written; and the Colosseum in Rome; and the Cathedrals of Europe, some of which are from five-to eleven-hundred years old, are many of them still in existence although the nervous systems which built them are long since dead.

Now animals cannot do this except to the crudest degree. Of course, there are probably some swallows' nests which have survived the swallows which built them; some ant-hills in Africa which have survived ants which made them; and some beavers' dams that are still functioning even though the beavers that made them may be dead. But for the most part, one can say that animals start where their ancestors started, and they can not profit by the experience of their race. On the other hand a new-born child has the advantage of the accumulation of all the wisdom of the ages available as soon as he is capable of using it because of this highly developed cortical means of communication.

Because of the development of the cortex, man has become ninety-nine plus percent a symbolic type of life. For instance, you call me for an appointment. You dial Fitzroy 2525, all of which are symbols. Because of an electrical current (a nervous system), they react on a switchboard downtown and by the use of a bell, another symbol, my telephone rings. By the use of words (symbols again) you tell me that you would like to make an appointment, and I tell you to come Friday, July 18, 1941, at 2:00 o'clock. (These are all symbols- labels for a day, a month, a year, and an hour.) I give you an address, 502 South Mariposa, Los Angeles, California. All of these are names, labels, and symbols. That Friday you take a street car and hand the conductor a bill (another symbol). He gives you some other symbols in exchange, including a transfer. You tell him that you want to go to my address, and he lets you off at a street that has a symbol corresponding to the one I told you over the telephone, and then you walk along that street until you come to the number(symbol) of my office. Therefore, by the use of symbols you and I are able to communicate and get together. Animals for the most part cannot do this, and these symbol systems are all functions that it has been possible for us to develop because we have cortexes.

Therefore, since we humans are ninety-nine percent a symbolic type of life, our survival and our adjustment is dependent upon how accurate the symbols we use are and how we interpret them. And conversely; if we are mal-adjusted, it is because we either have wrong symbols or are interpreting accurate symbols incorrectly. In other words clear communication is interrupted.

A sharper definition of 'symbol' is- a form of representation for three kinds of experience:

(1) The external events extracted by the human nervous system belonging to the fields of physics, chemistry, or the basic sciences.

(2) The internal happenings belonging to the so-called <u>normal</u> fields of psy-

chology, emotions, memories, fantasies, beliefs, etc.

(3) The internal happenings belonging to the so-called abnormal fields of psychopathology and psychiatry, such as complexes, compulsions, disorders, delusions, hallucinations, etc.,etc.

Primitive Symbols may be classified as follows:

(1) Posture, gesture, grunts, skeletal or vocal, and aural expressions, of the primitives.

(2) Systems of posture and gestures called the dance; ceremonies, marriages, funerals, etc.

(3) Forms left behind the organism, such as the plastic arts, music, instruments, clay, pigments, architecture, all of which are governed by customs and traditions. An example of this latter is- Buildings which are built to face certain directions according to some theology, towards the east, the sun, or the winds or other circumstances. Very elaborate cosmologies are expressed in our architecture.

There is a big gap between the first two groups and the third. In the third we find a means of communication which can be left behind. But these three groups are dependent upon the senses.

Posture and gestures are the most common forms of symbolization, and a person experienced in psychology can judge intimately another person by his posture and gestures and the timbre of his voice. Temper-tantrums and general responses are very similar in a baby and in a seventy-year-old retired professor.

A gesture is a symbol of discomfort. Gestures and posture become symbolic, then they become standardized, then systematized. The Polynesians have an elaborate silent language, a highly developed sign language of the eyes, and different kinds of grunts. Probably most of our intuitive judgments of other peoples' personalities are based on communication by this class of symbols.

For scientific advances we need symbols which are largely mathematical.

Language comes from the vocal-skeletal region. There is necessarily a great range in the methods of communication.

With the development of language, man came to use the following kinds of symbols:

(a) Poetry- which is a highly systematized method of rhythmic sounds. It could be called a metaphorical sound-system. It is dynamic and imaginary with much feeling tone on the thalamic level.

(b) Prose. This is the static type of linguistic expression. Here there

is a lack of feeling tone. And finally

(c) Mathematics.

The farther we get away from the dynamic to the highly abstract and static, the less pictorial our method of communication becomes. A symbol is like shorthand and contains only a few of the important characteristics of the event.

If a person is facile in handling the monetary and linguistic symbols of his time and environment, he can rule a nation. He can control public opinion and either produce prosperity or economic chaos.

We have tended to neglect the symbolism at the thalamic end of the scale, such a gesture and dance,etc. One reason for this is that we have moved north and covered up our bodies so that we cannot function so well as an organism-as-whole. Military drill and the Shriners' antics are very similar to the primitive dance. They include the same mechanisms. Like-minded-ness in a community or group is produced if each member goes through the same movements. This is seen in religion with its genuflections, and various other rituals of worship. Solidarity is established this way and people are tied together. 'Heil Hitler!' is an up-to-date example. The language of childhood is sub-linguistic and thalamic and the Chinese language is highly stylized.

The language of primitive people is very pictorial and descriptive, using a wide range of forms of communication. In our present-day languages we leave out many more characteristics than the primitives did. Malinowski points out that in one instance he knows, there is not one word 'tree' but a different tree term for each tree which has a particular type of use. Example: 'Tree under which there are initiations,'etc.

At the thalamic level, the impression is visual, pictorial, moving, synthetic, diffuse, and dynamic. It is here that consciousness first appears. It is where the synthesis of all senses occurs. Then the cortex abstracts from the impressions in the thalamus. Impressions become discrete and static at the cortical level instead of dynamic.

Symbols are designed to represent single characteristics and are very unlike the actuality. They are really totally unlike the living reality. It is the living situations that matter, and not the symbols which represent them. Things are indefinable except in relation to something else. You can get the feel of a thing (thalamic) but you cannot talk about it otherwise. Too much education is based on definition. We tend to turn out of our schools and colleges as graduates a fine lot of encyclopedias who know far too little about life and reality.

So in this complicated society, communication is almost a life and death matter. And correct communication and accurate interpretation of it gives us good predictability and hence contribute to our 'survival value'. But in my opinion we cannot either communicate accurately or in-

terpret correctly if we do not understand the origin and basis of all communication- the nervous system. This is a fact it seems to me too many teachers of language do not realize.

When the English interpreted Hitler's communication to the effect that if he got Czecho-Slovakia that would be all he wanted, their predictability was poor and their 'survival value' was precarious. As the English and others have been studying Hitler's nervous system and taking into consideration his gestures, postures, grunts,as well as 'Mein Kampf', their predictability has immeasurably improved and the possibility of their survival has increased apace. We cannot rely on <u>our</u> interpretation of words alone, we must know what the other person means by the symbols with which he communicates. And so it is in all human relationships what a word or symbol communicates to us is dependent entirely upon our perceptors, receptors, et al.- in other words, the nervous system. Our communication to others is likewise colored by our interpretation of what our nervous system abstracts.

I hope I have communicated clearly.

THE FUNCTIONING OF FUNDAMENTAL READING CONCEPTS IN MUSIC EDUCATION

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The basic aim or goal of music education is the same as that for general education. A modern educator who deals in music is interested in the complete education of the child through music. There is a vast difference between a musical education or an education in music and an education through music. The final test of successful music education would be that the individual has received sufficient training and contact with music to satisfy his personal needs and to make him a satisfactory member of society and to be sufficient for the station in life which he occupies.

Music education may be conceived as having five recognized areas, namely; (1) aesthetic experience, (2) emotional development, (3) creative attitude, (4) social values, and (5) skills and knowledges.

This listing clearly indicates the relatively small part which skill plays in the entire picture of education through music. Guthrie in his "Psychology of Learning" says that, "Skill consists in the ability to bring about some end-result with maximum certainty and minimum outlay of energy" (p.162). Skill in music may be interpreted to mean technical skill, that is, digital dexterity, and muscular or breath control; but these skills would be quite useless unless they are complimented by a music reading skill or ability to interpret the symbols of music notation.

In earlier years it was considered quite sufficient if children were taught to read music symbols or notation from the printed page and nothing more. That idea is still held by some individuals who are employed in the public school, however, there is a definite trend towards the teaching of music from the social-psychological-usage viewpoint.

For the purpose of this reading conference, let us direct our attention to the area of note reading in music education. It is very interesting to notice the similarity in the development of letters or reading symbols and the development of notes or music symbols. The early writings or hieroglyphics used symbols which expressed whole ideas. These were further developed or broken down into symbols meaning individual words and eventually into letters, which now constitute our alphabet. Each letter may be capable of indicating a variety of sounds, as well as being of service in a variety of situations. The same is true in music. In the beginning, we had simply curved lines or spaced dashes which might indicate the inflection or movement of the voice. Later, we had notes of unusual shape introducing the element of duration as well as pitch. The development of the staff into five lines and four spaces was a slow process. We now have a system of notation where each individual note is capable of indicating a variety of ideas and serving in a variety of situations.

In the early days of teaching reading, it was necessary for children

to memorize the alphabet and to take the next step in reading by combining these letters into words. The words were then formed into sentences, and if a child survived this ordeal, they would be allowed to read. To indicate the progress which has been made, let me quote from a reading manual which I recently read. This quotation indicates the complete reversal of the process. "The story is read first as a 'whole'. Many stories may be read as 'wholes'. Next the children learn to distinguish sentences within the 'whole' then phrases within the sentence, words within the phrases, and finally letters and sounds within the words."

In previous years, before a child was allowed to read music, or before it was thought that he was capable of reading music, it was necessary for him to memorize and to be drilled upon abstract notes and tones. (Here illustrations were given of abstract formal internal drill). After he had mastered single notes and tones, he was allowed to do notes and tones in combination, such as scales, triads, tetrachords, and arpeggios. (Here illustrations of formal charts using groups of notes unrelated to song material). These were then combined or lengthened into longer tone groups which could be compared to phrases and eventually a full song was given to the child to read. To paraphrase the quotation which was previously given from the reading manual, the modern method for reading music can be stated as follows: The song is first learned as a 'whole'. Many songs may be learned as 'wholes.' Next the children learn to distinguish phrases within the 'whole', then tone groups within the phrase, and at last, single notes or tones within the song.(Three songs were taught to the audience to demonstrate phases of the rote-to-note process.)

Some of the basic concepts for all reading include the following and the application which is made in the field of music is very apparent:

1. Reading readiness with its various phases, such as maturation, muscular control, and the like.

2. Skill. This might also be called technique or speed.

3. The recognition of symbols.

4. The audible pronouncement or the vocable element.

This fourth item should be extended to include thought content. Just as a word reading ability opens to the individual the vast printed literature, so a note reading ability opens to the individual a vast field of music literature. It follows that as one who[1] is not acquainted with standard literary works is considered illiterate, so in a sense one who is unfamiliar with standard musical works[2] is considered musically illiterate or musically uneducated. However, when the difficulty of learning to read music is being stressed, one should realize that it is not necessary

1.Here examples were given from standard poetry and prose.
2.Here examples were given from standard musical selections.

to learn a music vocabulary in the various languages. This may have given rise to the phrase so often misapplied of music as a universal language. This may be because it is called the language of the emotions which are common to all beings. The style of the musical selection and the thought which it is portraying may vary with the country or language, but these variations are expressed in quite a common notation.

To read a language from a printed page is a specialized act in the whole language development. Music reading, likewise, is a specialized act and definitely related to the entire field of music. For example, it is related to the performance field, for if an individual has read or performed a certain selection, he has an acquaintance with it, an appreciation of it, and a continued enrichment as a result of this contact.

Self-confidence is an essential in all learning situations. The performing and reading of music is no exception. It has been intimated that music should be for the selected few or those who are especially gifted. My contention is that it is for everyone and that anyone can be taught to sing who is not physically defective in the throat or in the functioning of the ear. Just as talking, the using of words, is a natural and normal activity for the individual, so inflecting the voice in tune singing, is a natural and normal activity for the individual.

Some of the recent research studies on grade placement of various items or activities, show that it would be wisdom and economy of time to change the grade level where these presentations are made. For example, it has been found that certain number concepts are taught with greater economy of time if they are moved to a higher grade where the children can grasp the meaning in a much shorter time. Likewise, some items have been eliminated entirely; for example, cube root and certain forms of bookkeeping. It has been shown by an analysis of common usage that certain words should not be included in spelling drill exercises, due to the fact that these words are rarely if ever used and that spelling in context is much more meaningful and lasting than abstract spelling exercises. Some of the recent studies in music education show very similar findings. It has been found very definitely that the grade placement of the rote-to-note process should be changed from the second grade, where it is now located, to at least the fourth grade, or perhaps the fifth grade. This shifting of the grade placement would naturally call for a shift in the method used, and would release much time in the earlier grades for other types of music activity, which have been found to be wanting, such as rhythmic activities, a richer experience in listening to and performing music of all types and an opportunity to explore various instrumental activities. Many theoretical phases have been proven unnecessary for ordinary music participation. For example, scale building and chord analysis.

Several interesting and helpful studies have been made with eye-span and eye-movement in the reading of music which are more meaningful when interpreted in conjunction with the eye-movement studies in general reading. As we have tests in reading comprehension, speed in reading, accuracy in reading, so we have tests in sight reading ability, music comprehension,

and technical perfection.

It is well-known that the method used in teaching children to read words from various books may depend upon the series of books or materials which is being used. Many books have been written with a definite prescribed method in mind. And I am afraid this is likewise true in music. In years past, textbook companies conducted schools to instruct music teachers how to present material according to the method which their books were written to follow. We still have many teachers in our schools who are completely lost unless they are teaching a certain block of material in a fashion in which they have been taught themselves. It goes without saying that these individuals are teaching songs and music and method, rather than educating the child by giving him an ability to read music and so complete that small block of his education.

The general educator has long recognized that the expert teacher is capable of using a variety of methods or techniques for presenting the reading of words, for developing within the child the power to get for himself the thoughts expressed on a printed page. We are now demanding that those who teach music shall have the ability to use a variety of methods or techniques for the teaching of music reading to children, so that they may read for themselves and learn the musical thoughts expressed on the printed page.

It is my belief that if children are taught a minimum of six or eight songs which contain the basic note combinations, if these combinations are then isolated so as to form a 'music-vocabulary' or fifty'music words', they are then ready to begin to read music for themselves. (Illustrate). I believe that a child is considered ready for a reading book in English when he can recognize some 250 words at sight. The point I am trying to make is that music reading is a simple affair.

Notes can only indicate the movement of the voice in three directions. They either indicate an upward movement of the voice, a downward movement of the voice, or indicate that the voice is not moved at all. The notes used for writing music have three variations. They may either be open or solid, with or without a stem, with or without flags. These differences of course indicate time duration. Even after letter names are given to the lines and spaces, only seven are used in comparison to the twenty-six in our alphabet. Again, I am trying to indicate the simplicity of music notation.

Music reading travels on plateaus, like any other kind of reading. One learns to identify, and then reads for speed and understanding. An occasional term or symbol will need to be learned as it is encountered in more advanced or difficult notation. This is similar to proper use of the dictionary.

Having acquired this music reading ability, a student has an avenue for enrichment and enjoyment which will be his as long as he lives; it will be his no matter what his economic or social status; it will be his through political and religious upheavals, and changes; it will be his for emotional release and an opportunity for him to commune with his fellowmen, himself, and his Maker.

THE FUNDAMENTALS OF INTERPRETATION

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Music is unique among the Arts, in that it is the only one which requires an intermediary for its interpretation. Literary creations are inscribed on the printed page for all who will to read. Painting, sculpture, and architecture need only be seen by the individual eye to exert their influence; to lift the human spirit into that realm where the contemplation of nobler things becomes automatic and inevitable. But a musical score does not so readily speak to one who turns its pages unless he be a highly trained musician. Even when a technically equipped musician is able to hear in his imagination with a fair degree of completeness the multitude of sounds represented by the notes of, say, an orchestral score, he will be the first to admit that the full impact and significance of that score is not realized until the composition has actually been performed. In other words, the hieroglyphs of music's symbols must be interpreted in terms of sound; in terms of tones which the reader of the score can not make unaided.

So the intermediary between the page of musical hieroglyphs and the one who would listen to music's message becomes something more than an interpreter; he must actually become a re-creator.

Will Earhart, in his admirable book on The Meaning and Teaching of Music , speaking of the understanding of completeness in a musical work, says, "It (a composition) sang in the mind of the composer as an undivided expression. An act of intuitive penetration will re-create it in the mind of another. But one condition of such re-creation is a singing state of mind similar to that out of which the composition was born."

Now it is the means for attaining that 'intuitive penetration' the 'state of mind similar to that of which a composition was born' that we would discuss today under the general subject of the Fundamentals of Interpretation.

Before considering ourselves capable of interpreting or re-creating let us turn our attention for a moment to the two contrasting theories of the origin, nature, and function of music.

One school of thought believes that the first instinct toward musical utterances was in the savage cry expressing the emotional states of terror, love, and elation. This theory-- which we might call that of the Primal cry-- advances the idea that musical expression results from highly active emotional states.

The second school of thought proposes the origin of music to be the 'original pleasure of the ear in tone.' Thus, in the dawn of civilization man was inspired to cut a reed and blow through it, to pluck a tautly stretched string, to stretch a skin over a hollow log and beat upon it-- all for the pleasure of the tone elicited.

These two primary aspects are present in all music; not always completely segregated from each other, in fact often inextricably woven together.

But if we were to give an example to illustrate each theory we might say that Wagner represents in his music dramas the 'Primal cry' aspect; everything wrought out of emotion and for the emotional reaction of the listener. The Pleasure-of-the-Ear-in-Tone aspect might find Bach its outstanding exponent; a composer whose work is spiritual, idealistic, sensitive, the result of intellectual artifice rather than personal emotion.

Now if our interpretive, re-creative efforts are to be based on a sound foundation we must decide at the outset whether the work we are interpreting belongs to the Primal Cry category or to the Pleasure- of-the-Ear-in-Tone. In other words, whether the composition is largely emotional, and intended to sway the emotions of the hearer or whether it is intrinsically intellectual and 'idealistic.'

This is perhaps only another way of saying that for the musical re-creator a sense of Style is imperative-- and that a true sense of style can only be achieved through an accurate historical perspective.

After having decided which aspect of music the composition in hand represents-- 'The Primal Cry' or 'The Pleasure-of-the-Ear-in-Tone' -- we must know, (1) something of the instrument for which it was written, and, if possible, (2) the circumstances under which it was intended for performance.

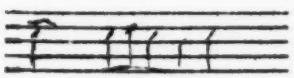
Let us take piano music for example. One might think that in the present day, when the piano is the universal domestic instrument, that an adequate knowledge of its workings might be taken for granted. It has been my experience, however, to discover that a surprisingly large proportion of serious pianists know almost nothing of the mechanism which aids or, in many cases, hinders them in their interpretive efforts. And it is hopeless to attempt a performance of seventeenth and eighteenth century music without a knowledge of the working basis of those keyboard instruments which preceded the piano; that is, the harpsichord and clavichord.

The harpsichord as well as the spinet and virginals are descendants of the Lute family-- the instruments of plucked strings-- whereas, the piano is an offspring of the Dulcimer family, where the strings are struck with a hammer. So when we play on the piano the works of the English and French harpsichord composers (Byrd, Bull, Purcell, Rameau, Couperin, Daquin) and of the Italian, Scarlatti, and the Germans, Bach and Handel-- we are performing them on an instrument quite other than that for which they were intended. Instead of just completely ignoring the principle of the plucked string and playing them as though originally planned for the piano, it seems to me that one comes nearer that 'intuitive penetration'---'the state of mind similar to that out of which the composition was born'-- if we try to hear with our mind's imaginative ear the quality of tone produced by the harpsichord and clavichord, which

very act of the imagination will cause one to attempt a suggestion of that tone on the piano.

Every instrument has certain shortcomings; but those very shortcomings are largely instrumental in determining the style of its compositions.

For example, it is not possible to produce sustained tone, especially in the treble register, on the harpsichord. To be sure the tone does not immediately die out, but, because of the sharpness of sound at the moment of plucking, the tone seems to diminish very quickly. To get around this peculiarity, something had to be invented which gave the illusion of sustaining tone-- and so the trill was devised. The same characteristic deficiency led to the invention of many of the ornaments which abound in early keyboard music. These ornaments are never written out in actual notes, but signs-- a sort of musical shorthand-- are used to show when these ornaments are to be inserted. One of the most common is that which we call a 'turn', which indicates that the principal note is followed immediately by the tone directly above, returning to the principal note, proceeding to the note below, and then back again to the initial tone.



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One readily sees that this gives the impression of lengthening the initial tone.

Another limitation of the harpsichord was that, due to its construction, it is impossible to increase or lessen tone by means of the finger. In other words, producing accents by various degrees of force as we do on the piano is out of the question. But the Seventeenth Century composers had discovered that the unsymmetrical vibration of two non-harmonic tones-- the clashing of the 'beats' of two tones not in the same harmonic sequence-- always created the effect of accent on the ear. Thus, those ornaments which we know as the mordant and appoggiatura were invented. These ornaments always fall on the accented part of a measure or phrase and should always be played precisely with the accompanying harmony--not before the harmony, as is frequently done; thus dissonance is momentarily produced and hence a sense of accent.

It is apparent therefore that some of the most characteristic features of the style of Seventeenth and Eighteenth Century composition evolved because of certain definite limitations in the musical instruments which were commonly used in that period.

With a comprehension of why these ornaments are used in such profusion in Seventeenth and Eighteenth Century music, one's attitude toward them and consequent performance will be quite different.

Many pianists seem to confuse the appoggiatura of Bach's day with

the appoggiatura, or grace note, of Chopin and the Romantic composers. But the grace note, or appoggiatura, of Seventeenth and Eighteenth Century music was used to provide dissonance on the beat which the composer wished to appear accented. The composers of the Romantic period-- when the piano had become the universal domestic instrument-- used the appoggiatura (the grace note) as a decorative detail in the melodic line. Sometimes it falls on the beat, and sometimes it doesn't-- depending on the shape of the melody and the taste of the player. But with Bach and his contemporaries the use of the appoggiatura followed certain fixed rules for purposes of accentuation, not for expression.

There are many other idiosyncracies of the harpsichord which made it inevitable that compositions of the Seventeenth and Eighteenth Centuries should have been written as they were. There is not time to go into them all here; but if we expect to be able to interpret, to recreate any of the keyboard music of that period, we must be familiar with those characteristics: the two banks of keys, for example, one of which produced tones much softer than the other; the use of the coupler; and not the least important of all-- the delightful dry, rustling, non-percussive tones which the harpsichord gave forth.

I have said that in addition to knowing something of the instruments for which specific works were intended, if possible, something should be known of the circumstances under which they were expected to be performed.

Again let us turn to the Eighteenth Century for illustration. Two keyed instruments were in common use at that time-- the harpsichord and the clavichord. The harpsichord was invariably used for concert performances because it had the more brilliant and penetrating quality of tone. (We must always remember that a concert performance meant playing before a gathering of not more than thirty or forty persons, usually members of a court. The huge concert audiences of thousands with which we are familiar today are phenomena peculiar to the Twentieth Century. In the future, we shall probably look back on this period during which one artist- a violinist, singer, or pianist- played for an audience of thousands, while other artists whose understanding of the message of music was equally great and frequently greater were allowed to starve-- as a period of inexplicable, barbarous practices.) The clavichord was a much more intimate instrument and unquestionably the most sensitive instrument of the keyboard family ever used. Instead of the string being plucked by a quill or metal plectrum at the end of the key-lever, as in the harpsichord, the tone was produced by an upright metal tangent inserted in the end of the key-lever, which gently touched the string and remained in contact with it while it continued to vibrate. In the best instruments, the finger of the player could actually feel the string stretch and give under it. This sensitivity made possible a delicacy of nuance and a subtlety of expression that has never been possible on any other keyed instrument. Manipulation of the key made a vibrato possible, or the note could be made to repeat rapidly and delicately without the finger leaving the key. But its only drawback was its extreme delicacy

of tone. It could only be heard in a comparatively small room.

It was, however, the favorite instrument of Bach, and the immortal set of Preludes and Fugues known as the 'Well-tempered Clavichord' was written for it, and, also-- surprising as it may seem to many-- the Chromatic Fantasy and Fugue. I know Madame Wanda Landowska has contended that the famous pieces in the 'Well-tempered Clavichord' were written for the harpsichord-- but internal evidence is certainly against her. The bright, rustling harpsichord could never have voiced the sustained and quiet song of the E-flat minor, E-flat major, B-flat minor Preludes and Fugues-- to name only a few. Such expressive music could only have been intended for the instrument which Koch, in his 'Musikalisches Lexicon', describes as "The comfort of the sufferer and the sympathetic friend of cheerfulness," in other words, the clavichord.

It is obvious then that it is historically correct to use great variety of nuance and subtlety of expression in the Preludes and Fugues and Chromatic Fantasy of Bach, while the Suites, Toccatas, and Italian Concerto, which were written for public performance, require the 'terraced' dynamic approach; that is, the alterations of loudness and softness can only be made in sections. The circumstances under which the former group were to be performed were intimate and personal, and the clavichord itself was intimate and personal; whereas the circumstances in the latter instance demanded virtuosity.

To those among you who have only thought of Bach's Chromatic Fantasy as a great virtuosic Rhapsody, I recommend hearing a fine performance of this great work on the clavichord-- such as I heard at the hands of Arnold Dolmetsch a few years ago. Such an experience makes one realize how far afield the much used editions of Bach by Hans von Bülow have led two or three generations of piano students in this country.

This brings me to the whole subject of editions:--

One of the first essentials for one who would interpret musical works is to have a copy of the composition which one knows to be as nearly as possible that which the composer wrote down. In other words, an authoritative edition. With Nineteenth Century compositions this is not so difficult-- because the printing of music was then already established. But with the works of composers anteceding the Nineteenth Century one must have an accurate historical perspective before accepting an edition-- no matter how highly praised.

There are Urtext Editions of both Beethoven and Mozart published by Breitkopf and Härtel. I consider the use of the Urtext not only invaluable but practically indispensable to the complete understanding of those composers' works. These editions are impossible to get now: indeed, the lack of definite knowledge as to whether or not Breitkopf and Härtel still puts them out or even whether the firm still exists is one of the tragic effects of the war. Some Educational Organization should see that these texts are duplicated in this country immediately and made available to

students. They comprise requisite source material for all serious students of music: They are in the public domain. Where is the Educational Foundation that will realize the value of scholarship to the American interpretive musician and will stimulate the right use of existent source material by republishing in America these authoritative Beethoven and Mozart texts?

Fortunately the monumental Bach Gesellschaft Edition of the complete works of that unique composer is available in all the important music libraries. The complete works of Henry Purcell, put out in an authoritative edition by the Purcell Society of London, should also be available on the shelves of every library. One of the greatest contrapuntists of the Eighteenth Century, a master of small forms, and one who has no peer in the setting of English verse to music, his works should be constantly studied by every serious musician. But Purcell is only a name to most American musicians.

The musical development of this country is widely publicized. What the mass of the people think of in that connection is virtuosic display. But the need of the country, the foundation on which all genuine musical development must be built is scholarship and research. If the virtuoso (by whom we set such store) is to be an asset to the art world, he must have the backing of sound scholarship-- scholarship that is not clogged with musty traditions, but a live scholarship which is the outgrowth of "that singing state of mind similar to that out of which the composition was born", mentioned earlier. And that necessitates his use of source materials. If he is to use those source materials-- in this case, authentic, unedited editions of the Classics-- they must be made available in our own country.

We have always relied on German scholarship and German research as far as music is concerned. The time is at hand when that scholarship is not currently available and may not be for a long time to come. Are we going to do something about it, or are we going to relapse into our natural tendency toward superficiality-- and be lulled into accepting the monumental impertinences of certain virtuosos, because we have been too indifferent to plant the young sapling of our natural musical heritage in the rich, dependable soil of scholarship?

Now if one knows exactly what the composer has written, knows something of the instrument for which the work was written and the circumstances under which it was expected to be performed, a sound background for the interpretation of the composition in hand has been established.

Such a background inevitably forces us to a careful and understanding consideration of style.

In order to get the sense of style represented in any specific work, we must study the composition as a whole first and then divide it into its smaller component parts. For every composer-- if he is worthy of the name-- has thought of his composition as a whole and then has set about building the separate parts, just as an architect must decide on the position of

each brick and stone after he has planned the building as a whole. Will Earhart has well said that "Notes are not builded into music, but music may be broken up into notes". And you will recall that Mozart, in attempting to describe his method of composition, said that before ever writing down a single note he heard in his imagination the entire composition "all at once"; and this he referred to as an almost indescribable joy.

Now this sense of a composition as a whole can only be gained by reading through the entire work at the beginning of one's study of it. This may be done either at the piano or by merely reading the printed page away from any instrument and hearing in one's imagination the sounds which the printed notes represent.

This hearing in one's imagination of a musical composition is more easily achieved with music of the Classic period (roughly to about 1800) than it is with Romantic and Modern scores. The reason being that Classic music is (broadly speaking) expressive in line, while Romantic and Modern music is expressive in timbre and color.

Now what do we mean by 'line' as opposed to 'color' in music?

The best explanation is by way of example. The great orchestral scores of Berlioz are good examples of music which depends entirely on instrumental color for its expression. When the scores of the "Fantastique Symphony" or "Harold in Italy" are played in transcription on the piano, we are astonished at the apparent dullness and lack of melodic beauty in the individual phrases which make up those great scores. Without its orchestral dress, without the range of tone color provided by that dress, this music not only does not express what it set out to express but conveys almost no expression whatever. It is the same with nearly all Modern orchestral compositions: Without the color of the various instruments which make up the orchestra, those compositions are in general unconvincing.

The music of Bach, however, is expressive entirely through the shape, the contour of the individual melodies, the melodic lines that go to make up any of his great polyphonic creations. It matters not what instrument they are played on, or whether or not all the voices in the polyphony are played together or one at a time, they are still expressive and impressive.

The same is true of the instrumental works of Mozart and Haydn. Also Beethoven-- particularly in his last quartets and last sonatas, where his mystic utterance transcends all thought of any instrument or tone-color. It is music of linear design, which, because of that which it expresses, suggests tonal color to the ear-- just as the drawings of William Blake suggest color to the eye.

The works of Chopin and Schumann, however, always demand the tone color of the piano: They are genuinely expressive only in that medium.

This applies to Schumann's orchestral works also: They are all thought on the piano and indeed sound far better on that instrument than they do in their orchestral dress.

Thus for Romantic and Modern music we need to hear the actual tone quality indicated on the musical page-- or at least must have had actual first-hand experience with that tone quality before we can rightly judge the style necessary to its performance.

Each composer has his own individual way of expressing things. And here let me say that after one has selected as authentic an edition as it is possible to find, then the signs which the composer has put down must be followed exactly. Many musicians apparently think that, by deviating from the expression marks which the composer has inserted in his works, they are more freely interpreting, or-- as they often put it-- they are expressing themselves. But I must reiterate-- the field of the interpreter is to re-create the work of the master whose composition is being performed, and, unless there is complete immersion in the work and complete forgetfulness of self, the achievement as an interpreter is negligible.

I shall never forget a performance by Artur Schnabel of Beethoven's great Sonata in A flat Major, Op.110-- a performance so moving and uplifting that in conversing with him afterwards I exclaimed in wonderment. He said quite simply: "I play exactly what Beethoven has written there on the page. Nothing more." He followed Beethoven's markings implicitly. Where he did not understand those markings, he did not substitute something of his own invention, but sought in the better comprehension of the work as a whole to realize the significance of every symbol.

And that is the responsibility of the interpreter.

For example: Beethoven's last works are imbued with a profound, philosophical mysticism such as had never been expressed in music before his time. Indeed no composer has ever touched the heights of mystical contemplation which Beethoven reached in the last five piano Sonatas, the last Quartets, and the Ninth Symphony. And, if we are to realize in performance even a modicum of the unearthly vision which the great Viennese master set down for us in tonal hieroglyphs, we must not only know something of the life of philosophy and meditation but we must also literally follow every marking which Beethoven used in such profusion in these later works.

In the works of both his early and middle periods, he was more sparing of so-called expression marks. It is interesting here to note that his early works are couched in the traditional Classic mould, where the expressiveness was that of line (as we observed earlier). As he grew older and physically deaf, his compositions are expressive in terms of actual tonal color and timbre.

Mozart can only be completely understood if we realize that his greatest work was in the field of Opera: That he was first and foremost a dramatic writer, and one who understood to an uncanny degree the delineatory powers

of individual orchestral instruments. The student usually first meets Mozart in the simpler piano Sonatas or Variations. Unless one is familiar with the Mozart of the Opera "Don Giovanni", the Mozart who knew how to project dramatic moods by means of melodic line and instrumental color, the tyro easily thinks the piano Sonatas are only graceful and elegant compositions, built on empty formulas. But the contrary is true. To be sure, Mozart was of the Eighteenth Century, and the Eighteenth Century did not express individual personal reactions. One of the many ways in which Mozart's great genius expressed itself (a genius unparallelled in the annals of music's history) was his ability to use Eighteenth Century formalism and give it vitality and individuality. He did not eschew the elegance and polish of the period, but surcharged that elegance with dramatic fervor.

It is the same with other composers; we must grasp the characteristics of their style as a whole before we can adequately interpret any one phase of it.

Schubert was a Romantic composer born into the world of Classic formalism. Brahms was a classicist born in the period of the Romantic movement; his works are expressive in line rather than color. Living in an age when Chopin, Schumann, Berlioz, Liszt, and Wagner all were actively contributing to musical history, Brahms was bound to reflect some of the Romantic warmth of that extraordinary period. But we can only understand his works through the study of line as the classicists used it.

Schubert used the well established formulae for Sonatas, Quartets, and Symphonies, but they were all expressive through color; and in his case that color has the timbre of the human voice. In everything he wrote there is a continuous, melodic flow, like the effortless singing of a faultless vocalist. We can never hope to re-create his piano music unless we approach it in the spirit of song.

Chopin's music can never be divorced from the piano and the mechanism of that instrument which allows the tone to sing on until it gradually dies away. I refer to the damper pedal, without which Chopin's works are unthinkable. Whenever they are transcribed for another instrument, his works are almost unrecognizable. They are completely Romantic in that they are expressive in color and not line.

It is so with every great composer. His peculiar stylistic approach is written indelibly on every page. Debussy, for instance, was interested in sound; sound entirely divorced from human emotion of any kind. That disembodied approach is not evident in his early works; but, beginning with the "Afternoon of a Faun", for orchestra, and the Preludes and Estampes, for piano, his work can only be approached if we have some conception of that twilight zone through which moved the remote imaginations of Mallarme and Verlaine.

With every composer, the very shapes of the phrases tell us all these things; the eloquent pause, the dynamic markings, and the use of the

almost universally accepted Italian expression marks. For example: An Allegretto grazioso with Brahms is slow; with Mendelssohn, much quicker. With Brahms, sostenuto means slow; all other composers use the word sostenuto to mean sustained, singing quality of tone. Chopin seldom uses any expression marks but those which indicate tempo.

Each composer has his own individual way of using music's hieroglyphs as the symbols of the creature of tone which he has made. By studying each one's works as a whole, we can usually find the key to interpreting those symbols.

But we must read accurately what the composers wrote; and then, when the particular work in hand is thoroughly understood, the duty of the interpreter is to convey the idea of the composer in such exact and suggestive terms that it will take complete hold on the listenenrs.

READING AND THE PSYCHOLOGY OF LEARNING

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Last week the newspapers headlined the maiden flight of the B-19 as a great scientific achievement. The same newspapers, however, made no mention of a far greater event, namely, that thousands of school children would for three months cease to be reading problems! These children will not stop reading, rather they will begin to read, to observe critically, to evaluate, to respond appropriately to the stimuli of the city, country, beach, and mountain.

Educators persist in having their problem of reading. It is difficult to say which group, the teachers or the children, experience the greater relief when summer vacation finally arrives. The pupils then start to read while the teachers come to summer school and summer conferences like this one to try and discover how to meet their reading problem in the fall.

By these opening remarks it is evident that I have come dangerously close to aligning myself with my good friend and colleague, Peter L. Spencer's conception of reading as any discriminative reaction of the person. Yet since he assigned me the topic of reading and the psychology of learning he must expect me to draw a distinction between reading and learning. Before discussing the advantages or disadvantages of such a distinction, let us examine what we know about development of children and the learning of children.

What do we actually know concerning the way in which children develop? What do we know concerning the ways in which children learn? I should start by saying that we know precious little--we should be very humble about the matter. What we do know enables us to arrive at only a few conclusions, but some of these conclusions are of considerable import for the teacher. Let us look at some of the aspects of the developmental process before considering "learning and reading".

Continuous Nature of Human Development

Human development appears to be a continuous affair. Although this conception is by no means a new one, the full significance of such a conception has not been felt by many of those working in the area of human development. Research on child development in the past has for the most part been carried out on a short-time sample of behavior. Children have been observed or measured for fifteen minutes or an hour or a day or a few weeks or a year, but few have been studied over a longer period. The data so collected have customarily been treated in a normative fashion. That is, averages or common characteristics have been emphasized. Look into almost any book on child psychology and one finds lists of the characteristics of children at different ages-- of the two year-old, the seven year-old, the adolescent, and so on. Yet

children do not actually exhibit these characteristics. These treatments of child development have lead the teacher to expect such behavior and when it does not occur he thinks of abnormality in one extreme or of marked acceleration or even genius in the other. And what is more significant, because of this the teacher begins to treat the child differently. Also most of these studies have taken only a small aspect of behavior for study. Particularly neglected have been the social and emotional aspects of behavior.

In contrast to this tradition a number of studies are in progress which are attempting to follow the same individual over a relatively long period of time. Conspicuous among such studies are the University of California Study of Adolescents carried on by the staff of the Institute of Child Welfare, the Harvard Growth Study, the Study of Adolescents of the Progressive Education Association, and the Fels Foundation Studies at Antioch College. These studies have shown quite different results from the normative cross-sectional approach. When the same child is followed over a period of several years his pattern and rate of development show characteristics which are covered over when one averages the results from a large number of children. Herbert Stolz reports that the thirteen, fourteen, and fifteen year-olds in the Adolescent Study of the University of California exhibited a spread in physical growth from little boys and girls to grown men and women. Even a single one of these chronological age-groups exhibited this spread. Further the rate of physical development differed widely. Some completed what Stolz calls the "cycle of puberty" in three or four years, others took six or seven years. Unless one obtained periodic measures of the same individual over a considerable period, these facts would be canceled out by averages of measures taken on different children at different ages. Development, then, would appear to be a continuous process, the characteristics of which for a given individual are discoverable only when one studies the individual long enough to obtain a picture of the trend, pattern, and rate of the on-going development process.

Total Growth

Development is a phenomenon of the total organism, of the organism-as-a-whole. Willard Olson, of the University of Michigan, has been experimenting in the light of this principle in attempting to get a more complete appraisal of the growth of the individual through the school years. He has been measuring not only mental performance, but physical, social, emotional and physiological dimensions of the development process. On the basis of some eight measures including mental age, educational age, reading age, height age, weight age, grip age, dental age, and social age, he attempts by an averaging process to arrive at an organismic age of the person. According to Olson, data from the University of Michigan Experimental School and a group of cooperating schools in various parts of the country show that the organismic age of a child is a better predictive index of school performance than is mental age or educational age. On the whole there seems to be high consistency between the measures of different aspects of the development process. This fact would seem in

part to justify obtaining a single index for the organismic status of the person by averaging the various measures.

Whereas the general picture from Olson's studies is one of the growth of the organism-as-a-whole, there are cases in which the growth process may be occurring at rather markedly different rates in different aspects of the individual. For example, height age, weight age, and dental age may be accelerated while educational age, mental age, and reading age may be retarded. Such cases are called by Olson, the split-growers. These split-growers show a high incidence of "behavior problems" and have difficulty in educational adjustment--they also appear to have a high percentage of reading difficulties. At a later period most of the cases of split-growth disappear and growth is more of a piece throughout the individual. Olson raises the question whether remedial work during this split-growth period is actually successful or does the individual improve as the split-growth condition begins to disappear? He is very sceptical of glandular therapy during such a period and casts certain doubts on educational therapy, such as remedial work in reading!

Recent emphasis, in the light of the conception of development as a phenomenon of the organism-as-a-whole, has been placed on the social and emotional aspects of development. These areas have lagged behind principally because of the difficulty of objective measurement. It is still an open question in this field whether the criterion of objectivity is appropriate or feasible. Present studies particularly of the personality and emotional adjustment of the individual proceed by a modified clinical method rather than by an objective method. In any instance these clinical and case-study approaches appear to be shedding light on the development process which the efforts using the objective testing procedures failed to do. I should like to mention some of the current studies in these areas, treating first with the social aspect of development.

Social Aspects of Development

Researches on the social aspects of development fall roughly into two groups, those which consider the personal relations of individuals in a small social group, and those which consider the social structure of the larger social setting in which the individual develops. Of the latter type are the anthropological studies carried out by Lloyd Warner and his associates. Warner studied a community in New England, making an exhaustive location of each person in the community, his circle of friends, the clubs to which he belonged, his church, who invited him to parties, whom he invited to social gatherings of all kinds, his family status in the social life of the community, and the way he was regarded by others in the community. The results of this study, published under the title, Yankee-Town, lead Warner to propose a class and caste classification of the social structure of a community. The caste system limits the person to the caste of his birth and is particularly evident in the white and negro races of the south. The class system, on the

other hand, allows of greater social mobility, yet is controlled by the class into which the individual is born. The class system is divided into the usual upper, middle, and lower classes, but with the addition of divisions within these classes, the number of divisions being dependent on the community. Thus Warner finds that in terms of the actual social relations within a community there may be an upper-upper, a middle-upper, a lower-upper class within the general upper class. Emphasis is placed on the effect these classes have on the developing individual, particularly the individual who may be moving from one class to another. In such mobility the person receives rebuffs and hurts not only from the class toward which he is moving, but also from the class he is leaving.

Other studies following this method have been carried out in other sections of the country. Particularly fascinating is the study by Davis and Dollard, Children of Bondage, of the class and caste system of the deep south. In this study considerable emphasis is placed on the effect of social mobility on the personal-social development of the individual. To cite one case: Ellen Hill, the Winner, was a negro girl, whose family was solid middle class, i.e., they owned their own home and the father was present in the family. Ellen had aspirations to climb into the upper class in Negro society. For the period of the elementary school she was fairly successful, she had a circle of upper class friends, did exceptionally well in school. As she went to junior high, the solid middle class status of her family disappeared; her father deserted, they lost their home, moved to a tenement room. Ellen changed from a girl admired and praised by all her teachers, to a girl who was the trouble maker and problem child of the school. Her school work became very poor, but through all this Ellen still had aspirations to enter the upper class. Through the efforts of a social worker a somewhat better adjustment to school was finally worked out, but Ellen still remained a girl with aspirations of class status probably far beyond the possibilities in the class system of her community.

These studies of the social structure of communities have a far-reaching implication for education. Teachers and educators are members of the class and caste system. For the most part teachers are middle class. There is evidence that when one tabulates the attention that teachers give to their pupils, class and caste factors enter the picture very prominently. For example, teachers tend to regard children from the lower part of the lower class as problems, both behaviorally and educationally, and tend to center their disciplinary attention in this direction. On the other hand teachers tend to approve behavior from the middle and upper class pupils. In some instances they are even humble with the upper-upper class children and parents. When favors and praise are tabulated a high favoritism is shown by teachers for the middle and upper-class pupils. There is some evidence that there is a higher percentage of reading problems among the children from the lower class. The prevalence of reading difficulties, so-called behavior problems, and lack of educational adjustment, is a well known phenomenon among those children from an "inferior" caste. All of the implications of the class and caste studies cannot be entered into here, but suffice it to say the educator interested in reading has a significant area here to consider.

Personal-Social Relations in Development

Of the studies that consider the personal relations of individuals in small social groups, I should like to consider two methods of investigating this problem. One of these approaches comes from the work of Caroline Tryon on the Study of Adolescents of the University of California. She has employed what she calls a "Guess-Who" method, which consists of having each individual in a school group react to a number of questions of the type. Here is someone who is very friendly, has lots of friends. By consideration of the number of times a given child receives mention in either a favorable direction or in an unfavorable direction and the favorable and unfavorable mentions that the child makes of others in his group, Tryon obtains a measure of the personal-social relations at different points in the individual's development. This method provides a simple technique by which the teacher can discover the child who is isolated and by examination of the other aspects of the development process some of the reasons for that isolation.

Moreno and his followers have employed an even simpler sociometric technique consisting of having each individual list his best friends. On the basis of these data Moreno constructs a sociogram of the interpersonal relations within the group. Such sociograms show clusters of individuals who mutually indicate friendship, that is, have reciprocal friendship relations, as well as relations that go in one direction only and presumably indicate aspirations toward reciprocal friendship. The isolated child by this technique is one who receives no friendship mention from others, but who indicates others as his best friends. These studies show that the isolated child often indicates as his best friends, members of the most sophisticated clique of the group.

Educational applications of the Moreno technique have been attempted by Zeleny, Jennings, and others. Zeleny reports a study in which sociograms were obtained early in a course and regroupings of the class made on the basis of the discovered friendship cliques. His evidence pointed to greater educational progress when this method was used than when random grouping was employed. The sociometric techniques would appear to form a base from which to plan a guidance program for the individuals who have difficulties in social adjustment.

Personality and Emotional Adjustment

Let us turn now to the aspect of personality and emotional adjustment. Efforts at appraisal of personality and emotional adjustment by objective methods have for the most part shed little light on the developmental process. There is serious question whether an inventatory or rating scale can measure in any valid way the underlying structure and form of a personality. For a considerable period of years the analyst and psychiatrist have relied on a clinical method rather than upon paper-pencil methods. Yet an interview, unless subject to control, fails to meet the usual standards of research methodology.

Recent developments in this area have introduced a controlled interview situation through which the individual may express certain aspects of the pattern or the underlying structure of his personality. Such methods are called projective techniques. These projective techniques take several forms, but in general there are two types, those that attempt to discover the form and pattern of the personality and its relations to others, and those that attempt discovery of the basic underlying structure of the personality. Of the former type I should like to mention two approaches that are similar but employ different materials. Murray in his book, Explorations in Personality, reports a method which he used in the Harvard Study, in which a series of pictures were presented to the person, about each of which the subject was to tell a story. This measure, called the Thematic Apperception Test, appears to reveal in phantasy the personality needs which are not expressed in direct overt action. In expressing the results of this method, Murray uses the concept of syndrome as a pattern of factors functionally related in such a way that if you change one of them the others will change. For example, such a syndrome as "conscientious effort" is patterning of factors in the individual involving such factors as blame avoidance, need for order, deliberateness, persistence, etc. The Thematic Apperception Test has now been used with elementary school, junior high, high school, and college groups.

Another somewhat related projective technique is that of miniature life toys. Of many using this play technique, Lois Murphy of Sarah Lawrence College has been employing housekeeping toys with young children not only to discover the conflicts and problems rooted in the family relations of the child, but also to get a picture of those aspects of the child's experiences that have so impressed him as to be brought out projectively through relevant materials. Pre-school and elementary school children appear to respond to this method by arranging the household toys in patterns which correspond to their own pattern of relationship with others. Many factors of this relationship which cannot be or are not verbalized are projected into the miniature life toy situation.

A variation of this method has been used by Eric Homberger Erikson on the Harvard students and the boys and girls in the University of California Study of Adolescents. Erikson calls his method a Dramatic Production Test. It consists of the experimenter telling the individual that he is studying movie and stage sets. He provides a small platform with a back-prop and a box of toys and blocks. The subject is asked to construct an exciting scene on the platform using what he wishes of the toys and blocks provided. Erikson finds that the adolescent and the college student readily project in this situation. The spacial arrangement, the general type of block construction, and the types of toys used are all significant factors in appraising the pattern and form of the personality. For example, Erikson found that the individuals who are insecure and highly dependent on adults, especially one or both of the parents, tend to construct against the back-prop, while those who are independent tend to construct out near the edge of the platform away from the back-prop.

The method that has been most widely employed in an effort to appraise the basic structure of the personality is the Rorschach Test. This measure consists of a standardized series of ink-blot pictures which the subject is asked to describe in a controlled-interview situation. Only recently has this method been used at all extensively with children. It appears to give an appraisal of the intellectual and emotional maturation of the individual. This method demands extensive clinical training to be used successfully, but appears to reveal the basic underlying structure of the personality to a greater degree than the other projective techniques.

The use of different materials in the school as projective techniques in the study of personality development is a relatively unexplored yet very suggestive area. Activities that would appear to have possibilities as clues to the personality development of the individual include not only the plastic and graphic arts, but creative writing, music, crafts, hobbies, dramatics, puppetry, free-play, and the like. Requisite for the collection of such material are an observant teacher with some training in interpretation and an opportunity for the child to express himself freely.

Expansion and Differentiation in Growth

Development does not appear to be the mere adding of new processes, but rather may be characterized as an expansion and differentiation process. Gross patterns appear early and become more refined and specialized as development takes place. The expansion and differentiation of language and thought patterns is well-known since the extensive experiments of Piaget. Similar evidence has been obtained by Mary Fisher in the Vassar College pre-school department. Her work shows the gross and unique meanings of word concepts in the pre-school and elementary school child. A few children appear to be able to express some of these meanings so that the adult can comprehend the differences between the child's conception of word symbols and the adult's conception. A collection of such "genetic semantic" material is to appear soon in a monograph entitled the "Universal Child".

Olson's material, discussed earlier, suggests that the growth pattern of an individual organism-as-a-whole may have its gross characteristics laid down very early or influenced to a large extent by genetic factors. For example, the growth pattern and the time of appearance of anomalies in the growth pattern appear to be strikingly similar in some siblings. There is some evidence of similarity between parent and child.

A like point is developed by Lois Murphy of Sarah Lawrence College in her observation that infants manifest different characteristic patterns of reaction which expand and differentiate in later personality development.

Incremental Development

Development within a given individual is not a smooth process; it

rather appears to have a pattern of spurts and relatively stable rates. The most objective evidence of the pattern of the velocity of development comes from the measurement of physical growth. Herbert Stolz, in analyzing the material from the University of California Study of Adolescents, treated his data in terms of increments of height, weight, etc., rather than in absolute amounts. Such a treatment of growth data shows the greatest rate during fetal life with a rapid decline in rate up to age four or five. From this point to about ten years in girls, to twelve years in boys, there is a very stable period during which the increments of growth are small and regular. At the close of this period, however, there is often a very low rate followed by a large spurt. Just following the highest peak of this spurt, sexual maturity occurs. The rate of growth then declines, at first rapidly, then more slowly on into adult life.

Similar, yet not easily plotted, changes in rate can be seen in personal-social behavior. On the same group of adolescents Caroline Tryon has reported the striking change in pattern of personal-social behavior from the stable pre-puberal period to the rapidly changing puberal period and again changes of dramatic nature during the tapering-off following the peak of growth. For example, Tryon points out that the common pattern among the pre-puberal girls was that of "quiet, lady-like" behavior, whereas, during the puberal cycle these same girls became boisterous, loud, and attention-seeking, often unfriendly to adults. A second dramatic change occurred during the post-pubescence period when the girls now approach adults as poised, mature equals.

Individual and Sex Differences in Development

Not only do Stolz, Tryon, and others find differences in velocity of development within a given individual, but also striking differences in the time at which the changes of rate occur in different individuals. This is at no time so conspicuous as during the period from ten to eighteen. Observation of a typical seventh grade will often show an almost equal division between the mature and the immature, with most of the girls in the mature group. I observed a seventh grade recently in which the boys ranged in weight from 68 pounds to 179 pounds; in height(the same individuals) from 54 inches to 65 inches.

The average difference of approximately two years between the time at which girls enter the puberal cycle until the boys enter the cycle is reaffirmed by Stolz's data and those of Shuttleworth on the Harvard Growth Study. That this difference is an average one means that there are actually many cases of greater difference as well as considerable overlapping of the boy and girl groups.

In personal-social development different patterns appear in boys and girls as well as within each group. In the pre-puberal period boys who are well-liked by their fellows are good at games, rough, not too clean, whereas, as already indicated, Tryon finds girls "quiet, little ladies". The difference in rate of development in favor of the girls as a group is

probably in large part responsible for the greater adaptation required of the girls who is popular with her "peers" during and following the puberal period. It appears necessary for the girls to make it "easy" for the slower maturing boys.

Development Creates Needs

Development involves the emergence of new patterns of behavior with new needs at each period. This factor is not unique to any stage of development or any point in school life, but has a stronger social emphasis in the adolescent period. Here the need emerges for new relations with members of the same and opposite sex, which makes these adjustments primary in the eyes of the "child-like adult". Often teachers have failed to envisage this time as a period in which the individual is learning to make such adjustments, is discovering his or her role as an adult, and often, as Lois Meek Stolz points out, is setting up values and ideals concerning social relations which may last through adult life.

Obviously such needs do not exist in isolation. They arise out of our culture, are influenced by early pressures in the life of the child, and by the attitude of adults concerning the adolescent's behavior. Needs then emerge as a result of the expansion and differentiation of the development process.

Nature of Learning

Let us turn now from our consideration of human development in general to consideration of another aspect of that process, namely, learning. Although there has been and still is considerable difference of opinion concerning the nature of learning, the following analysis represents certain consensus points, which all writers explicitly or implicitly admit. Difference in terminology often obscure these agreements from the teacher who reads accounts of the learning process. First, learning is goal-directed behavior. Learning does not begin as a blind, random, accidental affair, out of which by mechanical selection certain learned acts or habits arise. Rather, it is activity carried out for a purpose, to achieve certain ends or goals and to fulfill certain motives or needs. Learning is more rapid and permanent when the goal is definite. Permanency is more likely to occur if the goal is not too final and end-point but rather leads on to other related goal activities.

Second, learning depends upon the maturation or development process. When tasks to be learned are selected with reference to the maturation level of the learner, efficient learning results. Such a method may be called pacing. When the learner is paced, learning is often an immediate affair with a minimum of errors or none at all.

Third, efficient learning depends on high motivation. This may be

achieved through appealing to the pre-existing interests, desires, and motives of the learner, or by offering opportunities for creative discovery, or by appealing to social prestige, or by the use of the novel, the bizarre, or by reducing the task to the learner's level of understanding.

Fourth, learning undergoes a differentiation process in which a gross response or gross understanding becomes more specialized and more detailed. The learner, when he learns most efficiently, appears to proceed from a general understanding to a more detailed, specialized understanding with attendant skills and knowledges of specific type.

Reading and Learning

How do the various aspects of the child's development process and learning that we have considered bear on reading and the teaching of reading. It is evident that the consensus concerning the nature of learning makes it essential that the teacher understand the child, his developmental trends and goals. In other words, we have a new type of reading which must be carried out by the teacher, namely, the "reading of the child"! This reading is not a mere symbol process, but requires knowing the significance of symbols like personal-social behavior, status relations, personality projections in art, crafts, stories, and physical and physiological changes. We may say, then, that the teacher interested in reading must read the child with understanding.

From our discussion of personality and social relations it follows that in order for the teacher to read the child, the teacher must first read himself. What he expects of children, how he evaluates various forms of behavior, what even he will call reading, how he places children in catagories-- all are exceedingly important. If the teacher can read these symbols in himself, then he is ready to read the child.

I cannot emphasize too strongly the importance of the teacher reading the child, knowing the child's characteristics and his background. It is an interesting fact that almost anyone who does individual remedial reading work with children gets results in a goodly percentage of cases. It seems to matter little whether they use tracing methods, metromoscopic methods, or what-have-you. Actually by dealing with individuals these workers are in a favorable position to read the child. Some admit, like Grace Fernald, that they suit the method to the child and others do not.

I say to you then as teachers that if you would stimulate the child to improve in reading, which is but one phase of his development, you must know the nature of his development. And if you say to me, as you undoubtedly will, how can we know and work with each child when we have forty or fifty or two hundred? I say to you, learn to read the symbols of development and use the comprehension thus gained to administer efficiently that learning process called reading.

A DEVELOPMENTAL PROGRAM OF READING
Elementary and Secondary

Zelma W. Pierce, Counseling and Reading, Santa Barbara High School

This paper might have been titled "A Remedial Reading Program, but the whole plan is much broader and includes preventive and developmental, as well as remedial measures; hence, "A Developmental Program of Reading". It might also have been possible to present the story "Santa Barbara Becomes Reading Conscious" for, it appears, that is what has been taking place all over the United States in the last fifteen years.

I shall attempt to set the stage for this paper by using some quotations which express my convictions much more forcefully than I might do in my own words. First, I shall quote Dr. Spencer, who says;

"I think of reading as the process of making discriminative reactions to stimuli. The critical word in that expression is the word discriminative. It connotes purposeing, sensing, evaluating, choosing, adapting, and responding in accordance with the results of those processes. There really is little fundamental difference in the process whether the stimulus be mainly sound, touch, taste, or sight."[1](Why leave out smell?)

And again from the same source: "People must think ideas before they can record them in print." ... "Reading is the process of interpreting one's stimulus situations."... "Reading is a mode of living."... "All responses that are made with judgment are reading responses."

And then- "....a very narrow and restrictive definition of the reading process.--- thinking of reading merely as the ability to recognize printed words on a page."

Now I wish to warn you, even in the face of the last quotation, that I shall refer frequently to the narrower definition of reading- especially as I quote results of standard reading tests. However, I believe that an individual who is skillful at getting other peoples' ideas from a printed page has in most cases a high degree of reading ability as more broadly defined in the preceding quotations.

About eleven years ago an inquiring teacher attempted to discover the causes of failures in her seventh grade home room. A simple tabulation disclosed that approximately one-half of the final grades given these pupils were F's and D's. Of the thirty-six members, seventeen were boys, and nineteen girls with the percentage of unsatisfactory marks running slightly lower for boys than girls-- fifty-one per cent and fifty-four percent respectively.

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1. Spencer, Peter L., Gettsville Becomes Reading Conscious, Report of Claremont Colleges Fifth Annual Reading Conference, Summer Session, 1940. Pub. 1941. pp. 185,170,171

Closer scrutiny revealed that the frequency of unsatisfactory grades was low in Art and Health training (physical education), and consistently high in geography, mathematics, history, and English. In order to further analyze the situation, reading tests were given to 240 seventh grade pupils in the junior high school, using Ingraham-Clark Diagnostic Reading Tests- Int. I., Parts I and II. The results somewhat startled the teachers in that school. It seemed unbelievable that seventh grade pupils could have second, third, and fourth grade reading achievement! And twenty-eight per cent of them had no more than that level of reading ability as measured by the tests. The chronological age range, incidentally, was 11-1 to 17-1. I mention this because the present practice of promoting by C A permits no such extremes in grade seven today.

One valuable outcome of this investigation was a change in teacher attitude, a greater awareness of individual differences, limitations, and difficulties. These considerations had their effect on teaching procedures and grading.

Some time later a special reading service in the Department of Child Guidance was made available to elementary school teachers. It was discovered that ninety per cent of the cases referred to the Guidance Department for study had serious reading disability. According to the Binet tests, the difficulties could not be charged to low native intelligence. The tendency in years past has been frequently to say,"He's just too dumb to learn to read." and let it go at that. May I quote Dr. Spencer again, please, as he sets forth the idea "that social and personal maladjustments are really forms of reading disabilities".[1]

In this new plan, small groups of seriously retarded children, selected by the teachers, were given special remedial training in reading skills. No reading survey was made until the end of the first year, hence teacher recommendation was the sole criteria for admitting pupils to the special classes. The child's inability to do regular class work or to participate in the classroom activities- as discovered by the teacher- became the basis for selection. The experiment was begun in two of the larger elementary schools chosen for their differences in type of population. One school was filled with children of foreign-born parents who lived in a poorer part of town. These children had few, if any cultural experiences or opportunities for educational development outside of their school life. The other school had very few foreign children and its surrounding district was composed of average American families, many of whom owned their own homes.

Standard reading tests[2] were given these special groups for purposes of diagnosis and guidance in selection of materials. Instruction

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1. Spencer, op. cit,, p. 187
2. Tests: Monroe Silent Reading Paragraphs, Haggerty Reading Examination-Sigma I., Gray Oral Reading Paragraphs, Thorndike-McCall Reading Scale-Form 5-grades 4 - 6

was planned to fit the needs of individuals in the groups and frequent conferences were held with their teachers. Each child was given a physical examination which included vision and hearing tests. The personnel of the reading groups changed frequently and tests to measure achievement were given at the end of eight or ten weeks. New groups were formed at that time and instruction was continued for those few individuals who seemed to need it.

When this service was first begun many discipline cases were included in the reading groups. Those children who were troublesome in the classroom were better out, perhaps. In regard to the handling of this problem the opportunity to attend the special study class was considered a privilege which could not be extended to everyone. It was explained that lack of space and time made it necessary to offer this training to those people who were anxious to overcome their difficulties and would put every effort into improving their reading. (Propaganda). Intelligence tests were used to locate pupils of low native ability in order that methods could be adapted to their needs. The Stanford Revision of the Binet is preferred for all readin disability cases as many of the other tests depend too much on reading of printed material. Results from the latter would, of course, show low I.Q.'s for poor readers.

Some few teachers built their lists of remedial pupils to ten or twelve, or even half of a class was sent in. Explanation of purposes and values in this special service soon over-came these tendencies and smaller reading groups within the regular classroom resulted. Types of training found effective in the special class were transferred in many cases to the regular class. The remedial work was closely tied in with classroom activities wherever possible. Materials on specific units of work and committee investigations were used.

Another drawback which crept in once in a while was the idea that since reading difficulties were being cared for in the special classes, no effort need be made to help these individuals during the rest of their school day. One teacher commented, "I haven't been doing anything about Johnnie's reading since he's been in the special reading class. I'm just leaving that part of his education to the special teacher." This mistake was corrected by closer co-ordination of work and informal conferences with the teacher.

Information obtained from teachers, counselors, and others was available to the special reading teacher. Classroom reactions and other observations were checked on information blanks which asked about the following: language spoken in the home, degree of co-operation with school program by parents, economic and cultural status. of family, opportunity at home for individual development, difficulties encountered with child, type of companionship sought by child(adult or child), physical activity, talkativeness, preference for crowds or being alone, obedience, temperament, persistence, oral expression, comprehension of spoken language, interest in learning to read or in reading, physical condition (vision, hearing, speech, nourishment) and estimate of child's intelligence. These instruments have been revised and refined to better fit present needs.

A brief summary of the first year's work may be of interest. One-hundred-fifty children were given special help in overcoming reading difficulties, the service having extended to four schools. As much as three years' gain in reading was made, in many instances, in about forty half-hour lessons. An average gain of over a year was made by all groups during eight weeks of work. Alternate forms of standard reading tests gave objective measures for determining these gains. Teacher reports supplemented the objective tests and pointed out the benefits obtained from greater self-confidence in the reading situation.

During ensuing years the program broadened to all schools in the elementary district and included a variety of services. Conferences with entire faculties encouraged the discussion of problems, procedures, techniques, and materials. These contacts were invaluable. Particularly difficult cases were studied by the counselor and with the aid of the Director of Child Guidance, the child's teacher(classroom), the school doctor, the nurse, and the reading teacher, a satisfactory solution was usually found. Better pupil adjustment and accomplishment were guiding themes of the plan. Each year brought its new problems and changes were constantly being made to better enable the schools to meet them.

A city-wide nutrition study was undertaken to discover what effect undernourishment might have on school success and reading ability. According to teacher-opinion, four factors contributed to failure in reading: (1) home conditions. (2) the feeling of failure, (3) physical condition, and (4) lack of readiness to read. Some of the conclusions made from this study were as follows: children successful in reading are of stable temperament, good in concentration, and easily able to follow directions; their homes are financially secure, of average cultural status, and unusually co-operative; they receive encouragement in reading,having access to a higher class of books, magazines, and reference sets.

Summarizing the findings of this study[1] are the following fifteen points as reported by Dr. Lillian Lamoreaux, Director of Curriculum and Instruction in the Santa Barbara City Schools: (1) Physical deficiencies were found in both good and poor readers. (2) Despite inability to read, the retarded child shows good attitude toward school. (3) The retarded child is not unique in his interests and play. (4) He comes from a home less co-operative with school and less able to furnish cultural experience than that of the good reader. (5) He is more nervous less even-tempered and harder to manage than the successful reader. (6) He is less able to express himself and understand others. (7) Although fathers have comparable incomes and vocations, the retarded pupils have less than half the income per person than the better group due to difference in size of families. (8) Lack of adequate income contributes to the child's lack of a sense of security and to poor mental health. (9) The retarded child is more apt to be motherless or have a working mother. (10) Health records indicate that his entire family is less physically fit. (11) Thwarted desires and personality traits show retarded readers in poor mental condition, lacking adjustment. (12) The

1. Doctor's Dissertation, Lillian Lamoreaux, University of Southern California,1938

successful reader walked and talked earlier. (13) His parents are better informed about his physical condition. (14) Children given special remedial reading instruction progressed more rapidly than those whose physical health alone was treated. Both groups showed greater advance in school studies than a control group which received neither type of attention. (15) Improved physical health seemed to raise the intelligence of the children treated.

Reading surveys were instituted twice yearly for all elementary schools, at first, and later for secondary schools. As one part of this program, all reading tests used were analyzed to discover types of reading skills being measured. Diagnostic sheets evolved from this analysis were made available to the teachers. Instruction in their use and actual help in tabulating test results was offered by the special reading teacher. Through the use of these diagnostic sheets, the teacher was enabled to see at a glance those abilities in which her class as a whole needed improvement. She could thereby teach to the point of need, saving time by omitting those exercises pertaining to skills already satisfactorily mastered. The special reading service was available in all elementary schools on a regular schedule planned for the year, still continuing special diagnosis and work with the most seriously retarded readers.

Teacher-committees working with the director of curriculum and instruction have been formed on the different levels: kindergarten, primary, lower and upper elementary, and secondary grades. Through these committees, improved techniques are being developed. Bulletins issued by the Department of Curriculum and Instruction summarize the materials and suggestions of these committees and are an aid in making for better teaching.

One such bulletin is called "Experience Charts for Beginning Reading" . The advantages of this chart-method for the teaching of beginning reading will not be set forth in this paper as they are undoubtedly familiar to the majority of teachers. Its basis is the careful planning of learning experiences which in turn are used in stories from which charts are developed- controlling vocabulary which is meaningful to the child, repreating that vocabulary a sufficient number of times to make for retention by the child, and developing proper form in written speech. This, or course, is one important part in a developmental curriculum which suggests activities which form the basis of source material for learning experiences.

Another bulletin of value to all teachers is a "skills bulletin" with suggestions for building power in the skills. These suggestions cover activities in reading and communicating, mathematics, art, music, and physical education. The section on reading breaks into the following parts: the development of reading readiness, introduction into books, rapid development of general reading abilities, development of specific reading abilities, and refinement and enrichment. Communicating falls into these sections:- development of speech needs, suggestions on straight thinking, situations involving writing, suggestions for the effective expression of thought, and suggestions on handwriting. This bulletin is at

present in the process of revision to meet changing needs.

An important factor affecting pupil adjustment and accomplishment has been investigated during the past few years and reported recently in a dissertation entitled "The Effect of Thyroid Deficiency on the Social Adjustment, General Intelligence, and Anatomic Growth of School Children"[1].

A follow-up study is now under way on 200 cases of reading disability covering those children who received corrective instruction in the early years of the program and who are now continuing their studies in regular classes in the Santa Barbara City Schools. Only those for whom complete information is available are included in this investigation. Evidence statistically obtained appears to prove that children who needed and received remedial instruction in reading made definite gains by the end of the eight weeks' instruction period and are still maintaining those gains, continuing to improve in ability through ensuing years. More than three years have elapsed since the majority received remedial training and, during this time, they have made an average gain of over four years. This may tend to show that they not only maintain average growth but appear to gain approximately 1/3 of a reading grade for each school year. This tendency is all the more significant when we consider that seriously retarded readers have obviously been unable to make even normal development in reading abilities.

An additional study along the same lines has attempted to compare fifty-five reading cases who received special corrective training to a similar number who attended only their regular classes. They were matched in every way possible, age, grade placement, reading grade at beginning of program, reading retardation then, grade placement now, reading retardation now, time elapsed, etc. The study appears to show that the average reading retardation now is over four times as great for the control group, (not in special classes) as it is for those who received corrective training in special classes. The same relationship holds in regard to present reading retardation and present grade placement. These comparisons are based upon reading surveys using standard reading tests. We must recognize the fact that these tests measure the reading and interpretation of symbols such as appear in books and other printed matter. However, frequent follow-ups on special cases- in which teacher-judgment is secured- give important evidence concerning the child's adjustment. One such teacher report when checked periodically gives an excellent picture of the child's development, trends, tendencies, etc. Teacher judgment frequently points toward better all-round adjustment for those pupils who have shown improvement in reading skills. Better adjustment makes for better and happier living.

Reading surveys for the entire school system show consistent gains in reading abilities. The number of seriously retarded cases was reduced the second year of our program by twenty-five per cent of the number the previous year. This trend has continued each year, sometimes as much as sixty-five per cent decrease over the preceding year. The most recent

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1 Doctor's dissertation: Curtis Warren, University of Southern California 1941

survey reveals very few really serious reading disability cases and a large number of those have low native ability. When normal reading expectancy is obtained from mental age and chronological age , the majority of our so-called retarded readers are found to be reading up to capacity.

This improved situation is attributable to many factors, chief among which is the teacher's awareness of the need for better understanding of the processes of learning. Learning by doing is a favorite expression. Perhaps this really means that the child should have experiences, on his level of interest, which cause him to think before he can be expected to use ideas. He must have a meaningful vocabulary if there is to be understanding. Concrete things are more easily comprehended by the small child than abstract ideas. The activity program which presents worthwhile experiences may do more for building good reading abilities, reading in the broader sense, than we have here-to-fore realized.

Within the last three years the secondary schools have come in for their share of attention. At the present time in the high school, a reading committee is studying the situation and formulating plans for improvement. Faculty members on this committee have presented to the entire faculty group reports and suggestions concerning needs and possibilities for meeting the problems encountered. It appears to be agreed that no one special teacher can give a retarded student a"bag of tricks" with which he can solve every reading situation throughout his school day. Each class presents a new set of stimuli that call for varying reactions. The responsibility for improvement in reading lies very definitely with the classroom teacher even though she may see the student for only forty-five minutes a day- and then in a group of thirty or forty. This idea is set forth by Dr. Spencer when he says "...every teacher is a teacher of reading, and good teaching will help the pupils in developing better and more discriminative ways of responding to stimuli."[1]

There is now one hour a day devoted to reading diagnosis in the high school and both teachers and students make use of it. Instruction is given to correct serious disabilities, recommendations for improvement are sent to teachers in whose classes these poor readers appear, suggestions for practice on specific techniques are made to the individuals concerned as well as to their teachers. The counselor receives a report of findings and enters them on the student's permanent record. Informal conferences between classroom teacher and reading teacher accomplish much in solving problems troublesome to the pupil. Requests for help are promptly answered and fitting measures taken to remedy unsatisfactory conditions. Often two hours a week will work wonders for the discouraged reading case if proper techniques can be employed.

Startling disclosures are frequently made through the diagnosis of reading disability. One wonders, sometimes, how a pupil can attend school for eight or nine years and still appear to be so little affected by it. A complete history of such a case, no doubt, would reveal many factors contributing toward an answer. Some individuals lack auditory sensitivity to

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1 Spencer, op. cit., p. 187

such a degree that vowel sounds are lost. Hearing tests may not detect this trouble-maker. Consonants are stacked together in almost any order and such combinations as "blrd" for "blood", "brts" for "beats", or "fndy" for "friendly" may appear in their writing. Sometimes even initial consonant sounds are not sensed and blends or sequence of sound do not exist for them. There are, of course, few of these extreme cases and the regular classroom teacher can do little for them. Individual training involving a variety of techniques and procedures making use of undeveloped senses, auditory, visual, and kinesthetic, usually make for definite improvement.

One of my favorite examples of incorrect hearing came to light when a sixth grade boy asked how to spell something that sounded like "townix". After explaining that there seemed to be no such word, help was given for "town". The rest of the sound had no meaning until he described the western show that had recently visited town and it was discovered that the name "Tom Mix" was needed. Another case with similar difficulty appeared when the spelling of "teachie" was sought. Of course, the word "teacher" was suggested, but it did not fill the need because it was "teachi eppa to wrap up packages" that was being described. Many such cases exist among children who speak a foreign language in their homes. The above illustrate only one phase of many difficulties encountered in learning to read. Since this is not a paper on case studies or techniques in reading no more time can be devoted to them. case studies or techniques in reading no more time can be devoted to them.

Many factors contributing to a developmental program in reading have been ignored in this paper. One very important one is the wide variety of materials which have been made available through the Central Library of the City Schools. The building of this library has been given careful study and direction with the result that invaluable aid is obtained through classroom use of its books, pamphlets, pictures, films, etc. Catalogues have been compiled and sent to each teacher. Materials are grouped by grades, difficulty, subject areas, interest areas, and in other ways to facilitate their use. The visual education department has made its valuable contribution, also.

Through the department of speech the development of functional speech has made teachers and pupils speech-conscious, Since speech is one of the important means for communicating ideas, it must certainly be considered part of the reading program. Along with speaking comes listening in which the main objective of training should be the developing of a sense of discrimination between the worth-while and the trivial, encouraging selectivity in attention. Courtesy is a necessary part of growth in listening ability.

Art and music have played their parts in making for improvement in the total reading situation by offering worthwhile experiences. Through valuable supervision and direction, opportunities opened for pupils and teachers in these areas have increased manifoldly.

Since the approach used in this paper is somewhat chronological and

slightly historical, no attempt has been made to review experiments or reports of investigations carried on elsewhere. Any developmental program, however, depends to a very great degree on the findings of other school systems and leaders in the field of progressive education. As problems arise in any area, the field is surveyed to discover what has already been done about them, comparisons are made with local needs and limitations, and the best is embodied in a new approach to a solution. Constant modifications to fit the program to the needs of the children follow and ultimately something worthwhile is evolved.

The final step is the evaluation of the whole program. To assist in this an evaluation committee has been at work for the past three years, experimenting with and devising procedures and instruments for determining how near the results of our teaching approach the accepted objectives. Preliminary reports appear to point toward definite accomplishment in the development of those so-called intangible values. Since the majority of these intangibles are included in a good definition of reading, we may safely conclude that our developmental program of reading has done its bit in our educational plan.

THE FLASHMETER AS AN AID TO READING

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In the Fullerton Elementary Schools we have been doing some interesting experimental work with the Flashmeter.

The pupils we worked with were children who under conventional methods had failed to learn, yet seemed to have average intelligence and normal reactions. They had no vocabulary in reading and poor reading and study habits were evident. Because other methods had failed, we believed this new method was worthy of consideration and a careful trial.

If we but pause to analyze the variety of reports a group of people would give concerning a given situation, we cannot help appreciating the variation of observation of details. Take for instance a description of a wreck. You have as many variations in the story as you have people telling it. If we have such a wide variation in adults, think what it would be with children! Many individuals have poor seeing habits, and are decidedly lacking in seeing details. It is natural to conclude that when a child is confronted with such a new and novel situation as reading many confusions are apt to occur. Some children do not note all the details of the word and do not make the same visual impression as others. To remember the configuration of the word takes a great deal of training and practice for many pupils.

The flashmeter is based upon the principle of seeing the entire word or phrase as a single unit and not as isolated letters, syllables, or parts of a word. It helps to build vocabulary through quick recognition of the word. With the flashmeter the child sees the entire word at a glance, and there is not time to see or spell the individual letters, thus he must get a mental picture or visual impression of the whole word until this process becomes practically automatic. Here we can see the danger in teaching phonics too early. The child is apt to see the word as single letters and not see it in its entirety. He may spell the word one letter at a time which is a slowing up process.

From our psychology, Thorndike tells us there are two methods: First, the <u>part-whole</u> method which is seeing the parts and then putting them together. Second, the <u>whole</u> method which is seeing the whole word and then analyzing the parts, stressing reading for thought getting. This method is considered the most economical and satisfactory, and the one used by the Flashmeter.

In all of our teaching, and particularly in any form of remedial work, we find we must exert every energy to gain and maintain the interest of the child. How many times we have heard and read in our modern books on education that the keynote to success is to find the child's interest and level of ability and how well we realize that this is absolutely

essential to his progress. By means of the Flashmeter we have found that a high degree of interest is developed and maintained over a long period of time. There is a feeling of individual satisfaction and interest in their own improvement. I will never forget the reactions of the children to the Flashmeter the first day. They were so fascinated and interested in it, that we couldn't drive them out for recess. They wanted more and their enthusiasm was great. One might think, that like a new toy, when the new wears off, it no longer holds any further interest. I am glad to say that this has not been true with the Flashmeter. Repeatedly, the children have said, "I like this Flashmeter, it helps me in my reading and spelling." We, ourselves, were skeptical as to how they would respond to the Flashmeter and are happy to find the results most gratifying.

Concentration and attention are definitely developed with no forced effort on the part of the teacher. The Flashmeter gives the child confidence in his own ability, as he is able to make a definite check on his progress. If the child isn't watching and paying close attention as the word is flashed he misses seeing the word and this he doesn't like. He prides himself greatly on being able to see the word the first time it is flashed. There is a feeling of individual satisfaction. Getting and maintaining concentrated attention, then, really is no problem.

Marked changes in the attitudes of these pupils have been noted, and they have developed a feeling of security in their ability to achieve. One parent asked me what we had done to her girl. She said that her whole outlook had been changed, and for the first time she really thought she could learn to spell and was genuinely interested in it.

Let us consider now some of the very concrete things the Flashmeter does in reading:

1. It increases the child's span of recognition. If the child is a word reader, flash for him three-word phrases, calling his attention to the middle word, but asking him to try to see the whole thing. It is surprising how quickly he will clearly see a phrase instead of only one word.

2. It helps to develop left-to-right reading. Two or three flashes may be given to a line of reading, and the instructor can readily determine whether or not the pupil is reading from left-to-right. This same repeated flash technique also aids in developing left-to-right reading if the child has difficulty in this procedure.

3. A child's speed in reading is greatly improved through constant use of the Flashmeter. A short story may be reproduced on a four-slot slide.

4. We believe that the Flashmeter helps to remedy and prevent reversals. We had a little girl who reversed <u>saw</u> for <u>was</u>. Through constant repetition of these words on the Flashmeter she overcame this difficulty. We have no scientific explanation as to what corrected it, but perhaps seeing the entire picture instead of the parts of the word helped her. We do not

have enough experimental evidence as yet because our groups have been small. We are still pioneering in this field.

5. The Flashmeter replaces in such an interesting way the ordinary flash-cards and is much more efficient and time-saving. In the first place, flash-cards can't be held in the correct position as can the words on the screen from the Flashmeter. It is very natural to hold your flash-cards as a slight angle and not realize it. Then, too, with flash-cards we can't possibly flash the words as quickly or as steadily as with the Flashmeter.

6. Many of our faulty reading habits such as head and lip movement and vocalization disappear with the use of this machine.

7. One of the most important features is the fact that we can discover and correct reading disabilities, thus preventing failures.

For our material we selected "The Basic Sight Vocabulary" of 220 words found in the book "A Manual for Remedial Reading," by E. W. Dolch. Since these 220 words make up 50 to 75 per cent of all ordinary school reading matter, they should be recognized instantly by sight by all school children. In addition to this we used the list given in the book, "Improvement of Basic Reading Abilities," by D. D. Durrell which contains 754 words. There is a very close agreement between Dolch's and Durrell's lists. In fact we have accepted Durrell's study on the basis of the close agreement of the lower level. Only two of Dolch's 220 words are not in the Durrell list. Durrell's word list is an excellent one compiled for use in preparing for older children suitable remedial-reading materials with a vocabulary at the primary-grade level. The list contains 90 per cent of the words ordinarily used in the written compositions of children and is therefore also useful as a remedial spelling list. Then, too, we used phrases and sentences recommended by the Keystone Company found in a brief manual accompanying the Flashmeter set.

Our reading groups have consisted of approximately six pupils per group and ten or fifteen minutes per day allowed for each class. We worked with pupils from grades one through eight in reading and spelling.

In our reading classes we began with simple words and phrases within their comprehension level and gradually increased the difficulty and length of unit. The words, phrases, or sentences were flashed at 1/5, 1/10, 1/15, or 1/25 of a second, depending upon the length of the perception unit and the difficulty of the material. However, there is no concrete evidence available to establish the fact that a variation in the time of exposure has any bearing upon the case. I really couldn't state what the difference in time makes. Our ultimate goal was to decrease the time until maximum speed was reached. Various pupils in the class were called on for the correct response. The work was varied by introducing simple games and races.

The latter part of the year we experimented with a group of first

graders who were borderline cases and we were in doubt about their readiness for second grade. We worked entirely on vocabulary building. It was surprising how quickly these children responded to this new method and how fast they improved in their reading. The teacher particularly noted their assurance, independence and complete confidence in attacking words. They knew their words completely with no hesitancy or guess work.

I would like to digress for a few minutes to tell you about our Spelling groups. How often we find that poor reading is accompanied by poor spelling. Poor spellers are notoriously deficient in visual memories. We chose pupils from grades five and six who were poor spellers, but had good possibilities. By that I mean they had normal intelligence and reactions in every way. We spent fifteen minutes a day using words from the lists of Dolch, Durrell, and Jones one hundred spelling demons. The word was flashed as fast as the child could see the word correctly. We began with 1/5 of a second and gradually decreased the time to 1/25 of a second. The child got a mental picture of the entire word and wrote it on his paper. The instructor proceeded very much as follows:

1. Keep your eyes right here (pointing to where the word will appear on the screen).

2. Ready, one, two-- the word is flashed on the screen.

3. Can you see the whole word? Don't write anything unless you can write the whole word. Wait until you can see all of it. (It is better not to repeat the word as the child very soon will write part of the word on the first flash and finish it on the second. This, of course, defeats our purpose, as we want him to get a picture of the entire word at one flash. Repeat the word at later times until all have learned it.)

4. Ask pupil to pronounce and spell word.

5. Instructor checks to see word is written correctly.

6. Discuss meaning and use of word. (Illustrate by using word in sentences.)

7. Proceed to another word.

8. At close of period give a dictated test over the words presented.

Many repetitions of each word are given at various intervals. The number of words introduced depends upon the ability of your pupils and the difficulty of the word. Five new words a day is a fair average plus many review words.

Lorraine's teacher said, "If you can teach Lorraine to spell, then I'll really believe that the Flashmeter is worthwhile." Lorraine is a very shy, retiring child, in the fifth grade, having no concept of sounds, or ability to attack words. Besides helping Lorraine to spell

better, it is changing her attitude toward school and giving her confidence in herself. It can't help but benefit her personality development.

The spelling results have been most gratifying. Following is a table showing progress of the definite and carefully planned work with the spelling classes which was accomplished through the use of the Flashmeter. The pupils are from grades five and six. The classes were started October 10,1940 and continued until June 12,1941.

	Test 1 Oct.40		Test 2 Nov.40		Test 3 Dec.40		Test 4 Jan.41		Test 5 Feb.41		Test 6 Mar.41		Test 7 Apr.41		Test 8 May 41	
	S	PS	S	PS	S	PS	S	PS	S	PS	S	PS	S	PS	S	PS
Pupil 1	3	35	35	35	33	35	32	50	38	40	36	40	40	40	50	50
Pupil 2	7	35	35	35	35	35	41	50	40	40	38	40	40	40	50	50
Pupil 3	8	35	35	35	34	35	42	50	40	40	40	40	39	40	48	50
Pupil 4	8	35	34	35	35	35	42	50	39	40	38	40	40	40	50	50
Pupil 5	12	35	35	35	35	35	48	50	40	40	40	40	40	40	50	50
Pupil 6	14	35	35	35	35	35	47	50	40	40	40	40	40	40	50	50
Pupil 7	15	35	35	35	35	35	49	50	39	40	40	40	40	40	47	50
Pupil 8	17	35	34	35	32	35	38	50	40	40	40	40	39	40	50	50
Pupil 9	17	35	35	35	35	35	46	50	40	40	40	40	40	40	50	50
Pupil 10	22	35	35	35	33	35	47	50	39	40	39	40	40	40	50	50
Pupil 11	30	35	34	35	35	35	47	50	40	40	40	40	40	40	50	50
Pupil 12			35	35	35	35	47	50	40	40	39	40	40	40	50	50
Pupil 13			24	35	21	35	22	50	35	40	37	40	40	40	50	50
Pupil 14			19	35	34	35	35	35	40	40	38	40	39	40	50	50

Note: S Score
PS Possible Score
Test 1- Before using Flashmeter
Test 4- To test retention after two weeks vacation with no study.

The following results show what progress the Flashmeter children have made in Reading in Grades 2,3,4,5.

Pitcher 6

Pupil	Grade	Grade Placement Dec.	May	Gain Yr.	Mo.	Loss Mo.
1	2	2.3	2.9		6	
2	2	2.5	3.5	1		
3	2	2.2	3.8	1	6	
4	3	2.6	3.6	1		
5	3	3.0	4.1	1	1	
6	3	3.3	3.4		1	
7	3	3.3	2.7			6
8	3	2.8	3.3		5	
9	4	2.2	2.3		1	
10	4	3.9	5.2	1	3	
11	5	4.3	4.9		6	
12	5	5.3	6.1		8	

Progressive Reading Test was given to Grade 2 in December. Gates Reading Survey Test was given to Grades 3,4,5 in December. Gates Reading Survey Test was given to Grades 2,3,4,5 in May.

Note: Pupil No. 7 who shows 6 months loss has been absent a great deal. She is an extremely nervous child who becomes emotionally upset when taking tests. We feel she is making normal progress.

The following table shows the progress of a group of eighth grade pupils in Reading Rate, who were in Flashmeter Class twenty minutes a day, four times a week.

Pitcher 7

WORDS READ PER MINUTE

Pupil	Sept.	Dec.	May
1	128	152	178
2	126	144	164
3	96	126	158
4	106	132	150
5	204	204	218
6	156	222	288
7		134	227

Note: These reading rates were obtained from special rate tests given in the regular Reading Texts. The reader "Flying the Printways" by Carol Hovious was used for some of the tests.

Slide Making for Flashmeter

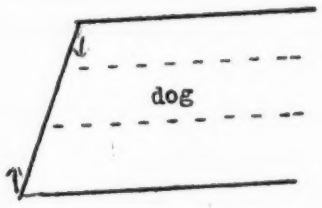
Materials Necessary

1. Keystone carbon paper
2. Keystone cellophane, amber in color
3. Keystone flash slide masks
4. Duco Household Cement

Procedure:

1. Take a single sheet of carbon paper, cut double the size of a lantern slide, and fold paper in center crosswise, with sensitive side inside.
2. Slip a sheet of cellophane inside the folded carbon paper and put in typewriter placing folded edge in first.
3. Clean type of typewriter and release ribbon as in stencil cutting.
4. Type word in center of carbon.
5. Remove from typewriter and separate carbon from cellophane.

6. Take cellophane and fold in three equal parts lengthwise. Fold top side down over word and bottom side up behind word and crease carefully. (This prevents smearing with constant use.) Fold as shown by arrows. This puts a plain sheet of cellophane on each side of typed word.



7. Take mask and punch out slot. Glue cellophane on mask so that word is parallel to slot. Next glue second mask on top of cellophane taking care to see that slots coincide. The rougher surface is the inside of the mask.

8. Make an identification mark in lower left hand corner. When card is placed in machine this mark will be in the upper right hand corner. This marking aids in placing slide in machine correctly. It is also an advantage to print the word by the marking, for ease in identification. Be sure to print the word on the slide when your marking is in the upper right hand corner, so that the operator can read it when the slide is in the machine.

9. Place newly made masks under weight to dry.

10. If preparing a three or four slot slide, allow three spaces between each typed line.

We are very much pleased with our work with the Flashmeter and feel that our results were entirely satisfactory. The Flashmeter was tried out in two schools this year and it proved so successful that next year we plan to use Flashmeters in each elementary school in Fullerton. We hope to continue our experimentation with the Flashmeter on a larger scale than we have this year.

THE APPLICATION OF READING TECHNIQUES TO SOIL CONSERVATION

Harry E. Reddick, Regional Conservator, U.S.Soil Conservation Service, Berkeley

I have been asked to discuss "The Application of Reading Techniques to Soil Conservation". In a recent letter Dr. Spencer said, "We are hoping to develop teachers who can read a landscape as effectively as they can read a book about a landscape. We want teachers who can read the 'stories in stone' as readily as they can read the stories in books."

I'm frank to admit that while I have been reading landscapes for a number of years, I never considered it as "reading". To me, "reading" has been essentially the obtaining of information or entertainment from books, magazines, newspapers, and other printed matter. And in my line of work, it has also included the reading of maps and blueprints.

But here we have the reading process given an almost unlimited application that includes observations and experiences with concrete things. In analyzing that concept, I thought of people in various walks of life who are not ordinarily considered as being well read, but who know their own environment. The backwoodsman is generally considered to be ignorant and illiterate, but if we view him in the light of this new concept we can see readily that he is <u>well read</u>. He can follow even the most obscure trail, can take care of himself for days at a time in all kinds of weather, and has an intimate knowledge of his total environment.

Among primitive peoples such as the Eskimo, one can find, according to explorers who have carefully observed them, a group that is making the best of a stern environment. The Eskimo is a good architect, he can build a weather-proof house out of frozen snow in a few hours; he is a clever mechanic, a hunter, a fisherman, and sailor, and, I imagine, a philosopher too. In the face of adversity, the Eskimo retains a happy disposition. One could go on and on listing individuals and people who are "well read", but who do not know how to "read". And there are many people who can "read" but who are not "well read". I have observed that a cook book does not necessarily make a cook, or a collection of phrases and words on conservation and erosion, a soil conservationist.

To be able to read a landscape is much more difficult than reading a book about that landscape. Settlers who came to this continent from Europe saw the American landscape through eyes focused by the image of their past life. And that view had a great deal to do with the tremendous soil erosion problem now confronting this Nation. Let us look at the American landscape critically. Many of the problems that are facing us have been growing for centuries and we have only years in which to solve them.

The problem of soil erosion didn't just happen, it began long ago, almost as soon as the first settlers embarked from their ships and landed on the bleak shores of New England or on the luxuriant shores of the

Hudson and the James.

Looking back, we can see that the settlers, the pioneers made mistakes. And we say,"How could they be so heedless?" Surely they must have realized that they were destroying the land. And a few of them did. But that is all of the past. What has been done has been done. Today we are attempting to rectify these mistakes in the use of the land and prevent new ones from occurring. Fundamentally it calls for a changed attitude toward the land from one of exploitation to one of continuous productivity, based upon sound conservation practices.

Teachers know that if a pupil has the right attitude toward his studies he will benefit by them. If he has a negative attitude, the chances are that his learning will not be of much value, and that is true of soil conservation. The individual's respect for the land is necessary for a sound soil conservation program. Terraces and dams and grasses alone aren't enough. An individual with no real appreciation of soil conservation will not get the best out of erosion control measures or continue his efforts. Doctors sometimes say that the patient survived because he had a will to live. And it is equally true that a "will to do"is as essential to the health of the land as it is to the health of the individual.

Let us go a little further into this question of attitudes. It seems to me that soil conservation, like most worth while endeavors, requires a positive attitude toward the land. Sometimes the word "conservation" is misread to mean to "stop". In short, to do nothing positive. Now that most certainly isn't conservation as it should be understood. Our nation has progressed because we have used our resources. The Indians who inhabited this continent had the resources but they used very few of them. They saved practically everything. They did not use the stores of coal, nor the petroleum, nor the timber, and they had few problems. Just by not doing, they kept this continent in practically a primitive state. But neither did they have schools or universities, or a number of other values that we have.

Those of us who work day after day with soil erosion and related land use problems sometimes have a tendency to overlook some of the fundamentals of the problem and the various programs in discussing it with those outside of governmental and farming circles. We sometimes get carried away by the details, and neglect the basic ideas. Of course that is true of all professional groups. Each group has its sets of symbols, and they become so used to seeing them and hearing them that they sometimes are converted to shorthand notes. And the seeker after the knowledge of these people wonders how he ever can understand all this complicated business. "Maybe", he sighs,"I'll just leave it all to the experts. They evidently know what they are doing, so I'll let them do whatever they are doing, and go on doing my work". But America is a democracy, and in a democracy all the people must "read", they must understand what things are about. They must not only study the subject in books through "reading" but must also "read" from the land itself. One is complementary to the other.

A river can be read in many ways. To the tourist it is either just a part of the scenery or a place to fish. To the engineer it is a source of power, water for irrigation, or a flood hazard that needs protective works to keep it from taking life and damaging property. To the soil conservationists, it may be all of these and something in addition. If the river runs clear, the conservationist can tell with reasonable accuracy that the watershed of that stream is free from erosion. If it is muddy it indicates that the river is either undergoing geological erosion or the land on the watershed is being denuded of its soil, and that this soil is carried by run-off water on to the stream.

A cultivated hillside that is rilled indicates that soil is being removed. Rilling therefore is one of the symbols indicating misuse of the land. And there are many others; some of them spectacular; deep, wide gullies, even to the uninitiated, indicate that something is happening to the land. But many times even here the full implication of the symbol is not always interpreted correctly or "read". That particular gully might be one that is rapidly growing, fingering out. And it is not always realized that such a gully might have had a very small beginning, an innocent little rill that as year followed year, grew larger each year. At first the farmer could cultivate across it and temporarily erase the symbol, just as a teacher erases symbols from a blackboard. Then one year the farmer finds difficulty in getting his equipment across the "little gully".

The "little gully" has become a "big gully". And that story with local adaptations can be seen from the eastern seaboard across the country to the Pacific Coast, and from the Canadian border to the Mexican border.

Now, let us look at some symbols that are more difficult to decipher. One we call "sheet erosion". In short, the removal of the soil from the land is so imperceptible to the eye that it appears that no soil is being lost. Then a survey is made and it is found that whereas the original depth of the topsoil was almost a foot, it now is only half that amount. The rest has disappeared.

Changing of landscape patterns through the application of soil conservation techniques is taking place all over this vast land of ours.

In order to read the landscape in a more critical manner, and from a physical point of view, land use capability classes have been developed. It must be understood that such a classification of the landscape does not take in social or economic factors. It concerns itself with the physical facts such as slope of the land, soil, degree of erosion, and related facts.

There is some land that is not of any apparent interest for agriculture. Such land is frequently rocky or otherwise barren. Or it might have some cover of brush, trees, or shrubs. In any case it should be allowed to remain in its present cover. It should not be disturbed,

because that might aggravate the run-off, or deposition, and erosion problem on more valuable lands lying below.

In looking at the American landscape and in "reading" it, let us look at it not from a highly specialized viewpoint of one interest in it, but in its entirety. I feel that sometimes those of us in our zeal to arouse the people to the erosion problem have neglected to present a well-rounded picture of what it means. We have talked of gullies, of millions of tons of eroded material carried down our streams. All of that is important, but it only presents a fragementary picture.

We must read the American landscape from a depth of knowledge and feeling. To read it accurately is both an intellectual and an emotional experience. Intellectually we look at the land for what it can produce. Emotionally we look at it as a way of life. And it is both. American folk songs use the land theme many times. The "Red River Valley" is a song of the land and an expression of the Americans' feeling for it. Many of our ballads are closely woven into the land. "My Country 'Tis of Thee', one of our National songs, rings with love of our country.

Yes, the American landscape is more than square miles, soil types, and acres of orchard or wheat. It cannot be appreciated through cold statistics alone. It must be viewed in all of its multitudinous phases.

I do not want to give you the impression that soil erosion is the only cause of soil wastage. Every year crops remove millions of tons of plant foods from the soil. Leaching of the soil also removes plant foods. However, erosion is most destructive of all three, because it not only removes plant foods from the soil but the physical body of the soil itself.

The cost of erosion can be measured roughly in dollars. It is estimated that this cost to the country every year is almost four billion dollars. But it is nearly impossible to measure the human erosion that soil erosion has caused; the movement of peoples from barren, eroded, bankrupt, once productive land. In these days when war is an ever-present consideration in the minds of all of our people, it is well to consider. that erosion is damaging to the National defense of a nation. Wars today are total wars, they are fought not only with men, tanks, and planes, but with food, fibers, and minerals.

Every acre of land that is protected from erosion adds to the strength of the Nation. Every acre that is allowed to wash or blow away weakens the Nation. I would be lacking in my duties, both as a conservationist and as a citizen, if I neglected to make you see that the <u>times</u> in which we live are such that we cannot afford to disregard any sector of the defense picture. It is gratifying to know that this soil conservation movement on a National scale was started before the present emergency confronted us. In short, the control of soil erosion is firmly established as to techniques, and, in the social machinery, the soil conservation districts which provided for the widest possible use of these techniques are spreading over the country.

It is not enough that we know certain things, but we must do as well. These times call for action. The future is rushing toward us with all the speed of a stratosphere air-liner. Time today is measured in hours. A hundred years ago it was measured in years. The tempo of the modern world is dynamic. We have no time to lose.

In addition, it must be realized that soils that are washed away clog highways, vital to the movement of materials and men, silt reservoirs vital to the production of power, and for irrigation. And I could go on and on citing situation after situation where erosion weakens our whole economy.

Until a few years ago we were complacent about our soil. We thought of it as imperishable and thought also that we had so much of it that there wasn't even the remotest danger that we would lack for good land. Complacency seems to be one of our besetting sins. It took floods and dust storms to arouse us to action. In times when the world was at peace, complacency wasn't as dangerous as it is now in a time of emergency. An apathetic citizenry is dangerous both to the external defenses of the Nation and to internal strength.

Democracy has created the social machinery to cope with erosion on a scale that was hitherto not possible. This social machinery is the soil conservation district, an area unit of government, formed by farmers themselves through which they can exert cooperative action in solving the erosion and related land use problems.

There are now more than 500 of these districts, covering more than 325 million acres, and located in 38 States that have enacted a soil conservation districts law. Recently four other States have enacted such enabling legislation, Arizona, Maine, Ohio, and Wyoming.

The United States Department of Agriculture has entered into memoranda of understanding with 416 districts, covering more than over 254 million acres.

One-hundred-twelve W.P.A. soil conservation projects, sponsored by 94 soil conservation districts, have received Federal authorization.

The farmers who supervise these soil conservation districts have an intimate knowledge of the local landscape. Through their districts, they are exercising local initiative in confronting the erosion problem in a cooperative effort that marshals the resources of the community to greater and safer production.

In this work they are receiving the aid of local, State, and Federal agencies. The district, through its elected supervisors, requests assistance. And that is an important point to remember. The American landscape is being transformed in an American way, in a democratic way, by the people themselves. The people request assistance. These districts show that American democracy has an inherent vitality and initiative

that sweeps away in a powerful wave the propaganda from the totalitarian States, that democracy is decaying.

The obtaining of primary experience with land should be an easy matter for teachers and students who live in the country or in small towns. Under these conditions, experience with the land is an essential part in the life of an individual. In the city, the gaining of such experience is more difficult. The average city person is apt to take the country for granted, if he thinks of it at all. Modemn technology is so highly complex that when a city man or woman goes to market he sees before him an array of foods so enticing that it seems impossible that they could have come from anything as prosaic as the soil.

He does not realize the care that has been lavished in producing those choice strawberries, or that box of oranges. And many of those who drive out in the country are rather oblivious to all the implications of the landscape. To them it is a stage setting for their picnic lunch.

If teachers and pupils in schools, especially those in city schools, are to learn how to read the landscape, they must be confronted with it as a primary experience. The Soil Conservation Service during this past school year has cooperated with several schools on tours of soil conservation demonstrations. These tours were carefully planned, and technicians of the Service explained the work being done. Generally, on these tours a little mimeographed leaflet is prepared for the guidance of those on the tour. Last winter a group of teachers in Sonoma County made a tour of the soil conservation demonstration work near Sebastopol. I think it will be of direct interest to you if I give a brief description of what these teachers saw on their visit to this work.

Starting out from the local high school, they journeyed down the road a distance of a few miles and saw a large irrigated Ladino clover field. It was explained to the group that on sites that are favorable to this particular clover, it makes a fine pasture and gives excellent protection to the soil from erosion. Continuing on a ways, the group made a stop to see some earth diversion ditches and terraces that were being built; and after that they continued on from farm to farm to see contour strip cropping, a gully protected by a heavy growth of trees and shrubs, a contour planted orchard, and several groves of Eucalyptus.

These teachers secured a practical "<u>reading</u>"knowledge of soil conservation. It was an elementary knowledge, to be sure, but it formed the basis upon which to build a more comprehensive knowledge of the landscape. I am sure that these teachers are now able to obtain more from such secondary sources as "To Hold This Soil", "Soil Defense in the Pacific Southwest", and similar publications.

The volume of information on the land is so vast that it is practically inexhaustible, but I fear that until it is related by direct experience to the land itself, we will not be able to change behavior patterns from a negative attitude toward the land to a positive conserva-

tion attitude.

We are all too prone today to depend solely upon newspapers, magazines, the radio, and motion pictures, instead of gaining direct experience. We let the other person select our experiences. We live vicariously. And even when we go to the country, to the seashore, or to the mountains, we often take along a portable radio and the latest magazines to avoid having to make the effort to see with our eyes and hear with our ears the beauties and glories of the land.

Yes, it seems that mankind prefers the symbols to the realities. For years this Nation went blithely along on the assumption that our soil was inexhaustible, that our forests were limitless, and that it was unnecessary to take heed for the future. Those men who directly observed the destruction taking place were not heard. They tried to point out that our soil . was washing and blowing away, that our forests were being depleted, and that we should face the realities of the situation rather than depend upon words that were no longer true.

Eventually these far-seeing individuals, however, succeeded in gaining the public's attention to the need for conservation, aided in many cases by dust storms, floods, and devastating forest fires. Nature put on a three-ring circus for the Nation that could not be disregarded. Something had to be done, and a great deal is being done today to conserve our natural resources. Yet we must not become complacent about the progress that has been made. And the teachers of this country can help to see that the Nation remains alert to the need for conservation. Through the students whom you guide, you can train the future citizens to read the realities of the American landscape.

THE SOPHISTICATES AND CHILDREN'S BOOKS

Mabel Rice, Whittier College

(To try to summarize in words a talk which was fully illustrated by pictures which made the points visually, poses something of a dilemma. At best it can be little more than the reiteration of names.)

The time is past when the artist in any medium apologizes for finding some degree of success in the juvenile field. It was not always thus. With the greatest chagrin Hans Christian Andersen was forced to admit to himself that his greatest reading public was children. Charles Dodgson went to the utmost pains to change his pen name to Lewis Carroll to conceal from his students and colleagues the fact that a professor of mathematics had written a story for children. Even today A. A. Milne in his autobiography marvels a little that it is the books he has written for children that have overshadowed his adult plays and mystery stories. But with those three names out of the way the pattern changes. Among the modern artists few are too great to take an occasional detour into the realm of childhood.

The literary world was amazed when Gertrude Stein, a Sophisticate of the Sophisiticates, tried to re-capture the thoughts of childhood in The World is Round, a stream-of-consciousness story for children.

Teachers of primary children who became accustomed to the "Hader Blue" in such juveniles as Cock-a-doodle-doo and Tommy Thatcher were amazed and thrilled to find their same Elmer Hader on the jacket of Steinbeck's Grapes of Wrath.

Lynd Ward's novels in wood blocks, God's Man and Mad Man's Drum, which startled the literary and art world in the late twenties, hardly prepare one for his delightfully simple illustrations in The Cat That Went to Heaven (Coatsworth or Topgallant, the Herring Gull (Medary).

Peggy Bacon's work hangs in art galleries from New York to San Francisco wherever "modern" artists are exhibiting. But she is equally intelligible to primary children who enjoy the Lion Hearted Kitten and The Nuisance .

E. H. Shepherd's whimsical little drawings for Winnie the Pooh are not too distantly related to the same artist's illustrations for Lawrence Housman's biography of Queen Victoria.

Elizabeth Enright, who writes and illustrates books for children on every level, and whose Thimble Summer was awarded the Newberry medal for the best children's book of 1938, is equally at home in the pages of Harper's Magazine. (See Sept. 1940)

Hardie Gramatky, one time chief animator at the Disney Studio, forsook

that work for the more challenging career of illustrator for such magazines as Fortune, Collier's and Country Gentlemen. But between assignments for the "slicks," he writes such delightful juveniles as Little Toot and Hercules, stories of a little tug boat and a fire engine which please Dad as much as Junior, though "not in the same place."

Willy Pogany's gay peasant colors have been familiar in scores of children's books for more than a quarter of a century. At the Laguna Beach Art Festival his pictures rub frames with the masterpieces of Botticelli and the Great Masters in the famous Living Pictures. Again it is but a single leap for Mr. Pogany from the Great Masters to portraits of the Dionne Quintuplets for a pudding company; another leap and he is back to Mother Goose.

Ludwig Bemelmans, whose Hansi and Castle Number Nine are only the beginning of a list of whimsical books which delight the juvenile reader, is equally at home in the advertising pages of Esquire or The New Yorker.

The queer round peasant figures, the peanut shaped clouds, the stiff "posies" of Wanda Gag are readily recognizable from Millions of Cats to her contributions in the galleries of Modern American Art.

The radically modern art of Boris Artzybasheff appears in some of the most definitely "adult" books. But his work is equally suited to a simple allegory such as The Apple Tree (Bianca) or in the jolly Seven Simeons, work suited to intermediate grades.

Tony Sarg's talents carry him from the murals in the lobbies of metropolitan hotels, to linens in the "arty" gift shops and back again to simple pictures for The Cock, The Fox, and The Little Red Hen.

One would hardly dare classify Grant Wood as an artist in the children's field. Yet the Farm On the Hill (Horn) with illustrations by Grant Wood is reference work in more than one "Farm Unit." In it one discovers kinship to "The Threshers," "The Woman with Plants" and other famous Wood paintings.

Among our California artists who work with children's materials but whose work has attracted the attention of the Sophisticates are Helen Dowd and Leo Politi. Miss Dowd, who works under the brush name of "Lietta" may be found in wall paper, in ceramics, on linens, and in books for the preschool child. Leo Politi's Little Pancho is a runner-up for Little Black Sambo, but Leo himself is quite at home in the Hollywood manner.

Rachel Field, William Rose Benet, Monroe Leaf, Deems Taylor, N. C. Wyeth are only a few of the others who are equally at home, be the audience juvenile or adult. N. C. Wyeth's colorful action pictures have long since been familiar in the classics of boyhood, Robin Hood, Treasure Island, and the King Arthur stories. More recently he did the art work for Margery Rawlings' The Yearling. All of which may help every member of the family to appreciate the annual household calendar published for the Morrell Meat Packing Company. Annually the calendar, one of the most useful for school purposes, carries a large beautiful series o scenes of historical or literary significance.

Rice 3

Conclusions:

1. The line of demarcation between the area of adult art and the juvenile field is very narrow. The difference is in style, not in quality.

2. Parents and teachers who of necessity must become familiar with the literature of childhood may find themselves working with front rank artists of the day.

3. From the artist's point of view the juvenile field offers an increasing challenge in literature, in art, and in music.

PROBLEMS, PROCEDURES, AND MATERIALS
in the
READING PROGRAM OF LOS ANGELES SECONDARY SCHOOLS

Helen Jewett Rogers, Secondary Curriculum Office, Los Angeles City Schools

Point of View

The purpose of this discussion, as its title indicates, is to consider some of the practical aspects of the problem of reading improvement at the secondary school level. Failure to dwell at length on the philosophic and psychological aspects of the problem does not mean that we are unaware of them or ignorant concerning them. Rather, it means that awareness of them and understanding concerning them is assumed and we go forward from that point to consider practical ways and means by which our knowledge and understanding may be made to function.

We subscribe heartily to the principle that reading in its broad sense means reaction to stimuli, that the field of semantics has much to offer in the comprehension of what is read, and that "reading is action." But, in the last analysis, we are forced by the practical situation which we face day after day to think of reading as the interpretation of symbols on the printed page. Our "reading problem" is to increase the degree of skill with which the forty to forty-five pupils in a given high school class are able to "read" those symbols.

Reading in Secondary Schools

Perhaps the most important development in this area in the last decade is the fact that reading has come to be recognized as a legitimate part of the secondary school program. Formerly it was assumed that the teaching of reading was the function of the elementary school only, that when a child left the sixth grade he had completely mastered the techniques of reading.

Research studies in reading since 1930 exceed twelve hundred in number. Among the significant findings of this research are the following:

1. A large percentage of reading difficulties are to be found in the upper elementary grades and high schools.

2. Satisfactory methods for correction and elimination of errors, and subsequent improvement in skills and techniques, have been developed.

3. Outstanding factors which contribute to the difficulty of reading materials have been determined.

As a result of these studies, authorities in the field agree that it is necessary to extend the period of development of reading skills to the secondary schools, including the junior college.[1] As a matter of

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1 Rogers and Stone: English Skills in the Junior High School, Los Angeles City Schools Publication No. 338, 1940

fact, there are a number of aspects of the mechanics of reading which are so complex that they should not even be presented prior to the secondary school.

Reading Conferences

Administrators and teachers in the junior and senior high schools of Los Angeles are very much aware of the fact that there is a reading problem and are attacking that problem in various ways. There are many evidences of concern in the part of our secondary teachers. During the 1940 spring semester, announcement was made by the Curriculum Office of a series of meetings on techniques for teaching reading in secondary schools. With no pressure brought to bear to force attendance at these meetings and no ballyhoo attempts to promote the series, we did not know whether to expect an audience of ten or of fifty. Each meeting was at-attended by about four hundred teachers.

Workshops

The Los Angeles City Teachers' Summer Workshop in 1940 and 1941 had large groups of secondary teachers studying techniques and materials for the reading improvement program. In addition, the 1939 and 1940 Teachers' Institutes included series of meetings devoted to a study of the same problem.

Publications

Further evidence of our concern is the fact that several recent publications of the Los Angeles Curriculum Office deal wholly or in part with the problem of reading in secondary schools. Among them are the following:

The Improvement of Reading in Secondary Schools
Publication No. 358 1940

The Three R's and Readiness for Life
Publication No. 347 1940

English Skills in the Junior High School
Publication No. 338 1940

Your Junior High School
Publication No. 353 1940

Recommended Reading References- Grade Seven
Publication No. 322 1939

Recommended Reading References- Grade Eight
Publication No. 323 1939

Recommended Reading References- Grade Nine
Publication No. 324 1939

Road Maps and Treasure Hunts
Publication No. 345 1940

Books in the Los Angeles High Schools
Publication No. 346 1940

Each of these publications has been presented to secondary principals, to teacher groups, and to curriculum advisory committees. Faculty meetings have been devoted to a careful study of them, and in many cases these publications have implemented the curriculum planning by teacher conference groups in individual schools.

State Committee on Developmental Reading

We are watching with interest the work of a state committee on Developmental Reading in Secondary Schools of California. This committee was organized and functions as a sub-committee of the State Secondary School Principals' Association. Teachers, curriculum workers, administrators, and college faculties are represented in the personnel of this state committee and the monograph which is to come from their study should be a valuable addition to the literature on the subject.

Textbook Adoptions

Perhaps the strongest evidence of our concern about reading improvement in the secondary schools of Los Angeles is the study and selection of textbooks during the past five years. Adoption of textbooks for our secondary-schools is rather an elaborate procedure. Publishers are notified as to the subject matter fields in which studies will be carried on during a given period. Specifications are made as to the kind of material and the type of format that are acceptable. Committees composed of classroom teachers and supervisors in the field are appointed and books are submitted to them for careful study. In most cases, city-wide balloting is arranged following the committee study so that all teachers of the subject may indicate their preferences. Books which survive this course of eliminations are then recommended for adoption. One need only look over our present Authorized List of Textbooks for Junior and Senior High Schools to see the wealth of fine new material to strengthen the reading improvement program which has been added to the list since 1937.

What, specifically, are the problems which confront us in the secondary schools of Los Angeles in the field of reading? Stated broadly, our primary problem is to meet the need of boys and girls <u>to read</u>. This is a large order, and as we work to fill it we encounter a long series of problems which present varying degrees of difficulty in their solution.

Reading Grade Placement

One of the first steps in attacking the reading problem is to discover the present reading level of each pupil. This opens wide the old

problem of diagnostic testing with all of its ramifications. Fortunately, most of our secondary schools have a smoothly functioning counselling system which gathers necessary data on reading grade placement by means of standardized tests. Certain such tests are adopted for use by Los Angeles secondary schools and are available by requisition from the Business Division. It is not the purpose of this discussion to go into the merits and disadvantages of the various tests. Suffice it to say, most of our junior and senior high schools have available the type of data that are necessary for determining reading ability and diagnosing reading difficulties.

Data on Reading Ability

Strangely enough, in spite of this fact, herein lies one of our serious problems. It is to get this information from the files and statistical tables in the counselor's office to the classroom where it can function as a vital part of the teaching program . Not unlike the economic problem, ours is one of distribution, of routing to the "consumer" the information that has been assembled. Some of our schools are solving this problem admirably; others are not.

Physical Causes of Reading Difficulty

We have made fine progress in our efforts to discover and then to remove or correct the physical causes of reading difficulty but there is much still to be done. P.T.A. groups have been generous in helping to finance purchase of glasses for children whose parents are unable to do so. School clinics have done yeoman service in discovering and treating eye abnormalities and other health handicaps. We are a long way, however, from solution of the problems of mal-nutrition, nerve strain, and general physical debility which are reflected in children's failure to be competent in reading.

Emotional Blocks in Reading

The problem of understanding and if possible of adjusting the emotional causes which may be blocking success in reading is still more difficult. In our large classes and huge high schools we cannot boast of too great success in this area. Sympathetic teachers and a guidance program that sees each child as a separate and distinct individual are our best hopes. Fine things are being done; much more must be done.

Basic Problems in Reading

Having solved as best we can the problems just noted, we find the classroom teacher in junior and senior high school faced with two major responsibilities so far as the reading program is concerned. The first of these is to make sure that each pupil grows in the quantity, the quality, and the scope of his reading. The second is to achieve for each pupil increased mastery of the special skills and techniques of reading. There may be controversy as to which of these is first in importance. Perhaps they are equally essential. Certainly no reading

program is successful if it fails to meet both objectives. And both must be handled in terms of the ability and maturity level of each pupil.

Reading Interests

In attacking any reading problem, a major concern of the teacher must be to discover and to capitalize upon the interests of the boys and girls in her class. Many devices are available which help to get this information. Interest inventories, personal interviews, group discussions, simple questionnaires, all these have possibilities. Whatever the means used for discovering the interests of the class, the important thing is to know what they are and then to select reading material of varying degrees of difficulty which deals with those interests.

Suitability of Material

This brings us to what is probably our greatest problem, namely, the finding of suitable material to implement the reading program . It is very difficult indeed to find books for high school pupils who are seriously retarded in reading, because the ones with simple vocabulary and sentence structure usually deal with subject matter-- either factual or fiction-- that insults their social maturity. In recent years some fine new material has appeared on the market but publishers are still far short of meeting the need for books in this area. School librarians must be constantly on the alert to get every new book which has something to offer to the retarded reader in secondary schools.

Reading Standards of Able Pupils

The retarded pupil is not the only one about whom we are concerned. Not infrequently, solving his problem is simple compared to the struggle which we must wage with the bright and competent reader who is coasting along, perfectly satisfied to read very little and to read books of inferior quality. Extending the reach and stimulating the reading interest of the normal and gifted child is a serious problem in our secondary schools. We are far from having solved it.

Time for Reading

A problem which we sometimes forget is that of finding time when pupils may read. Pressure of course of study requirements and extracurricular demands makes it very difficult indeed to set aside sufficient time for quiet reading. The high tempo of our urban civilization makes less and less time available at home for reading. Apartment dwelling and the radio era offer other complications. We are aware of the problem, but what to do about it?

Improvement of Reading Skill

In the field of improving the skills and mechanics of reading we have a twofold problem in the secondary schools of Los Angeles. One is to pro-

vide remedial instruction for the pupil who is deficient in this skill. Here we must distinguish between the pupil of low ability and the one who is normal or better in intelligence, but who is retarded in reading skill. The remedial reading program is obviously for the latter group. Certainly we must meet the need for remedial instruction in our secondary schools, but we must not lose sight of the larger program, that of the general reading improvement of all pupils. Too often when a remedial reading class is set up, the assumption is made that reading need be taught there only. On the contrary, as was indicated early in this discussion, we are convinced that the teaching of reading skills and techniques is a function of the secondary school for all pupils. We must be constantly alert to see that remedial instruction in reading is provided for those pupils who need it and can profit from it, but at the same time we must be sure that a program of reading improvement, both in taste and in skill, is moving forward for all pupils.

Teachers of Reading

Not the least of our problems in the reading improvement program in the secondary schools of Los Angeles is to find teachers who are successful in this field. Elementary teachers are trained in how to teach reading; secondary teachers are not. This is a serious mistake which continues to be made by our teacher training institutions. By and large, we find that our most successful high school teachers of reading are those who have formerly been elementary teachers. They are able to adapt the devices and techniques which they used with young children to serve the needs of pupils in their high school classes.

School-wide Reading Programs

Finally, we are facing an all but over-whelming problem in trying to promote school-wide attacks on the reading problem. While the English or Social Living teacher will continue to carry the major responsibility in this area, we are convinced that every teacher must be a teacher of reading. Specialized vocabulary in each subject matter field and the kind of reading skill necessary to cope with the written material in that field must of course be taught by the teacher in the classroom. Only when all teachers share the responsibility for the reading improvement of all pupils shall we be able to cope successfully with the reading problems of our secondary schools.

II. Procedures

In Los Angeles we have set up a program of improvement of English skills which extends through Grades VII, VIII, IX, and X. As the basic English skill, reading is of course a primary emphasis during these four years. If our work is well done, pupils should be competent in this field by the end of the tenth grade so that less attention to the reading problem should be necessary during the last two years of the senior high school.

Junior High School Social Living

The major part of the reading program in the secondary schools of Los Angeles is, therefore, carried on in the junior high schools. There has been concerted and specific attack on the reading problem in our junior high schools for several years. While we are far from mastering the problem, we are certain that never before have we done such an effective job of improving reading skills and reading tastes as is now being done in the Social Living classes in our junior high schools.

The double-period basic course which we call Social Living carries the major responsibility for the reading program in our junior high schools. While schools vary somewhat in their methods of attacking the reading problem and while individual teachers within a given school may vary widely in their procedures as they carry on a program of reading improvement, certain practices are widespread and may be considered typical of what the secondary schools of Los Angeles are doing in this field.

Class Organization

In the average Social Living class the teacher uses three types of instruction procedure. One is for the class as a whole, another is for small groups composed of pupils having common or similar difficulties, and the third is individual instruction for those having special problems or serious retardation.

More advanced techniques of the reading process are usually presented to the entire class, since all pupils are likely to need them. Techniques and vocabulary which are peculiar to a given subject matter are also presented to the entire group. Finally, and perhaps, most important of all, teachers usually find that the best lessons in appreciation of various kinds of recreational reading and of material of literary value are those in which the entire class participates.

Suggestions

Experience has shown that the following points are important in a successful reading program in junior and senior high schools.

1. The attitude on the part of the pupil is of paramount importance. If he has reading difficulties he should be made to understand what they are, and he must have an honest desire to correct them. Without the active cooperation of the pupil, little can be done. It is the responsibility of the teacher to develop group rapport which makes reading improvement a desirable goal.

2. Adolescents seem to require much encouragement. They thrive on praise, but that praise must be merited. Pupils are quick to recognize insincerity in unwarranted approval.

3. Most teachers agree on the importance of some form of record keeping by which a pupil can measure and watch his progress. These devices must be sufficiently simple to be easily checked. Self-tests and individual scoring devices are liabilities rather than assets when they become so complex that the bookkeeping consumes time and energy that should go to the program itself. Most reading textbooks present suggestions and devices for keeping records of individual progress. It is the principle and not the particular device that is important.

4. Pupils profit from hearing oral reading done well by the teacher. Too little of this is done in secondary schools. Poor oral reading by pupils in audience situations should be eliminated, however. Oral reading exercises must be carefully planned and presented only under proper conditions. These include voluntary and careful selection of material, adequate preparation by the reader, sufficient checking by the teacher, and proper audience attitude.

5. Of vital importance is the arrangement of a pleasant environment for reading activities. School libraries help to meet this need but individual Social Living classrooms should be attractive places with reading resources which are appealing to adolescents in appearance and in content. Not only is it important that an adequate place be provided for reading activities; but as has been indicated earlier in this discussion, it is also essential that adequate time be allotted for this purpose.

6. Particularly in the seventh grade, impersonations and dramatizations of the material read offer interesting class activities. Children enjoy such exercises and they aid materially in vitalizing the reading program. Even in the senior high school adaptations of this technique, such as characterizations, are successful.

7. Introduction of new books and stories both by the teacher and by members of the class is an important aspect of widening the scope of pupils' reading. The teacher's ingenuity is taxed constantly to find new and different means by which this can be accomplished.

Rate and Comprehension

Special procedures and techniques for improving reading rate and reading comprehension have been suggested for the use of our high school teachers of reading. A recent publication of the Curriculum Office listed the following specific aids which were recommended by Dr. Violet G. Stone in a series of conferences on reading.

1. Improving rate of reading

   a. Explanation of causes of reading rate, as eye movements, reversals, etc.
   b. Teacher reading aloud with pupils, gradually increasing the tempo
   c. Pupils following the oral reading of the teacher by hand movement as marker.

d. Teaching techniques for skimming, finding main points,etc.
e. Elimination of inner speech.
f. Teaching mechanics of book usage and aids to location of materials.

2. Improving comprehension
   a. Provide many different techniques for
      (1.) getting the main idea in a paragraph and presenting the main idea in a sentence
      (2.) getting all ideas by answering specific questions
      (3.) getting ideas and rewriting in one's own words
      (4.) supplying titles
      (5.) drawing inferences (read, then answer the question, "What do you think?")
      (6.) following directions (for going, making, finding, etc.)
      (7.) finding arguments for and against
      (8.) completing an outline
      (9.) reading diagrams, charts, maps
      (10) interpreting pictures
      (11) summarizing by sentences and by outlines
      (12) listing details

   b.Develop a series of the above techniques and provide for repetition of given skills applied to various subjects. Exercises can be developed and filed in appropriate envelopes, as
      (1.) Mathematics and Science
         (a) development of vocabulary
         (b) development of step by step solution
         (c) solving problems according to specific directions
      (2) Social Studies
         (a) supervised analysis of problems according to specific techniques
         (b) directed class exercises in use of several books
      (3) Literature
         (a) practice in judging how you would have ended the story or planned the attack
         (b) changing the title or making sub-headings

In addition to exercises and devices for increasing rate and comprehension, much work is done in developing and increasing vocabulary, and in correcting mechanical difficulties. The latter type of instruction is particularly important for retarded pupils, while vocabulary enrichment is essential for all groups.

Remedial Reading

Most of our junior high schools now have special remedial reading classes for pupils who are seriously retarded in reading. Formerly these classes were composed of pupils below a given reading grade placement. Obviously that was a mistake since it sent to remedial classes pupils of low ability who could improve little if any.

At present we use the Reading Expectancy formula $\left(\frac{2MA}{3}-CA\right)$ to determine who is to go to a Remedial Reading class. While we recognize the fallability of this statistical measure, our experience indicates that it is the most valid means by which we can select pupils for remedial instruction.

Our secondary schools vary in the type of procedure followed in remedial reading classes. This variation is due in part to the difference in need for such service in various neighborhoods. Some schools offer more than one remedial reading class in some or all semesters. Others set up one class at each level and send to it those whose need is greatest. Others have ungraded groups, with pupils from all grade levels in the same class. In most cases pupils are programmed to the remedial reading class for an entire semester. In a few situations, however, classes are operated on a tutoring basis and a pupil is there only until he has corrected his specific difficulty.

In schools which have double period Social Living classes, the remedial reading class usually takes the place of one of the two Social Living periods. In schools which have separate English classes the remedial reading group usually is substituted for the English period. In a few situations the remedial reading class takes the place of one elective. We strongly disapprove of such a plan because it means an extra academic class for the child who is least able to take it.

Phenomenal progress is made by pupils in most of our remedial reading classes. It is not unusual for a pupil to advance a year or two in his reading grade placement during one semester in a remedial reading class.The teacher who is able to bring about such a gain is a jewel beyond price!

III. Materials

The materials with which the reading improvement program is implemented are, in general, of four types.

Library Books

First are the resources of the library. These must include the widest possible variety of subject matter to meet all interests, books of all degrees of difficulty from the simplest vocabulary to adult material, and current magazines of many kinds. The general reading program goes forward successfully only when there is ample material upon which to draw. While the school library of course furnishes most of this reading material, many of our high schools have close cooperation with nearby branch libraries so that the resources of the great public library system in Los Angeles are at our disposal.

Textbooks

The second major source from which our reading improvement material is the Authorized List of Textbooks for Los Angeles Secondary Schools. Books on this list may be purchased from school funds. All textbook facili-

ties are in reality a part of the reading program.

There is now easy reading material in almost all fields, for retarded readers of less able pupils. In the last two or three years many new titles have been added which help to meet the recreational reading needs of our slow learners, particularly in Social Living classes.

Books for Improvement of Reading Skill

In addition to the recreational reading materials referred to above there are special books for instruction in reading skills assigned to each grade level. These have devices, drills, and various procedures for teaching reading techniques. There are a number of excellent texts of this type now on the market. Following are the ones which are at present authorized for use in the secondary schools of Los Angeles.

Seventh Grade

Horn, McGroom, Smith: More Adventures. Ginn.
This book contains interesting selections, followed by study helps, tests, and suggestions for improvement of reading skill, speed and comprehension. Pupils like this book immensely and teachers who have tried it are enthusiastic. It is simple in vocabulary and sentence structure, yet interesting in subject matter.

Pooley and Walcott: Growth in Reading, Book I. Scott,Foresman.
Designed for seventh grade remedial reading, this book is divided into six unit groups of poetry and prose. Material is varied and is largely modern, with study helps following each selection. The book has a comprehensive glossary. Recommended for reading improvement of normal and superior pupils who are retarded.

Wilkinson and Brown: Improving Your Reading. Noble and Noble
An excellent text for remedial reading classes or the reading improvement program in Social Living classes. There are detailed and careful directions for each exercise, providing an incentive toward reading improvement, and attacking specific problems with specific exercises. Other features include many devices, an appendix, an excellent index, and bibliographies for both pupils and teacher. Suitable for pupils of average and superior ability who are retarded in reading.

Yoakam, Bagley and Knowlton: Reading to Learn, Book I. Macmillan
A worktype informational reader whose sub-title is "Learning New Skills". Short, factual articles are followed by tests, vocabulary drills, suggested activities, and a few book lists. Emphasis is on development of fundamental skills in reading. Material deals with animals, modern travel, famous people, health and hygiene, civic improvement, and reading improvement .

Eighth Grade

Heffernan, Richards and Salisbury: Desert Treasure. Wagner.
Strongly recommended for retarded readers in grade eight. First half of the volume is a thrilling adventure and mystery story, appealing to adolescents, but with a vocabulary level of about fourth grade. The second half is a series of study plans based on material in the story, principally concerning California desert life. A valuable book for reading improvement classes.

Roberts, Rand and Murphy: Let's Read! Book I (Gold Book) Holt.
This gold Let's Read book is a companion book to the silver Let's Read. It is simpler in both form and substance, though equally attractive in format. The exercises are highly motivated. This book is particularly well-adapted for eighth grade pupils of average and superior ability, who are retarded in reading. The stories, which are varied and of current interest, have been selected by boys and girls in public schools. The drawings are the work of a high school boy, and are both original and intriguing.

Yoakam, Bagley and Knowlton: Reading to Learn, Book II. Macmillan.
Work-type informational reader whose sub-title is "Gaining New Knowledge." Short, factual articles followed by tests, vocabulary drills, suggested activities, and book lists. Emphasis is on development of fundamental abilities in reading. Material deals with travel, medical progress, geography, study techniques, and civic activities. Planned for eighth grade reading improvement program.

Ninth Grade

Hovious: Flying the Printways . Heath.
A remedial reader, with major emphasis on reading techniques. Material is fresh and modern, the style breezy, the terminology that of aviation. Numerous drill devices are presented, not only useful in themselves but suggesting methods for construction of other drill materials by the teacher.

Roberts and Rand: Let's Read! Book I (Silver Book). Holt.
Stories, informational articles, and a few poems-- all dealing with lively, contemporary material. Most of the selections are followed by easily graded self-tests. All have the number of words, making speed tests easy. Major divisions of subject matter are: Animals, people, motion pictures and radio, the modern world, and high speed. Reading techniques are explained to students. Planned for reading improvement program for retarded pupils who have average or superior ability.

Yoakam, Bagley and Knowlton: Reading to Learn, Book III. Macmillan.
Work-type informational reader, sub-title: "Exploring New Fields". Short, factual articles are followed by tests, vocabulary drills, suggested activities, and a few book lists. Emphasis is on develop-

ment of fundamental abilities in reading. Material deals with activities of government, language and books, logic, motion picture criticism, good taste, thrift, and the symphony orchestra.

Tenth Grade

Hovious: Following Printed Trails: Heath.
A practical exercise book for the improvement of reading skill, using materials of real interest to young people. Its journalistic style makes it readable and teachers have found it a useful addition to reading improvement materials.

Salisbury and Leonard: Making Sense , Book I. Scott, Foresman. A consumable workbook; excellent for teaching organization and orderly thinking. Valuable as an addition to comprehension aspect of reading.

Eleventh Grade

Broening, et al: Reading for Skill. Noble and Noble.
A rather academic approach to improvement of reading. Valuable for advanced pupils of academic interests. Emphasis is literary rather than utilitarian. Stresses reading with a purpose. Good section on use of the library. The book has useful tests with their keys.

Teachers' Materials

Finally, there is the wide variety of materials which teachers themselves have collected for use in this program. Stories clipped from magazines and bound in manila folders, short articles on unusual topics of interest to adolescents, mimeographed study helps for text and other material, flash cards for the very retarded,-- these are but a few of the innumerable types of materials which ingenious teachers are using to vitalize and extend their reading improvement programs.

Professional Bibliography

From time to time the Curriculum Office sends to secondary schools a bibliography of fine, live, new professional publications in the field of reading. A recent bibliography included the following titles. Teachers have found them stimulating and helpful in planning ways and means to solve their reading problems:

I. PHILOSOPHY- CURRICULUM- POINTS OF VIEW

Dewey, John: Experience and Education. Macmillan, 1938
Jarvie, L. L. and Ellingson, Mark: Handbook on the Antecdotal Behavior Behavior Journal. University of Chicago Press, 1940
Meek, Lois H. and others: The Personal-Social Development of Boys and Girls with Implications for Secondary Education. Progressive Education Association, New York, 1940
Morrison, Henry C.: The Curriculum of the Common School. University of Chicago Press, 1940.

Prescott, Daniel: Emotion and the Educative Process. American Council on Education, 1938
Thayer, V. T; Zachry, Caroline; and Kotinsky, Ruth: Reorganizing Secondary Education, Appleton, 1939
Travis, Lee; Baruch, Dorothy: Personal Problems of Everyday Life, Appleton Century, 1941
Witty, Paul and Skinner, Charles: Mental Hygiene in Modern Education Farrar, 1939
Zachry, Caroline: Emotion and Conduct in Adolescence . Appleton, 1940
The Saber-Tooth Curriculum. McGraw-Hill, 1939
Education for American Life. Report of the Regents' Inquiry. McGraw-Hill, 1938

II. BOOKS OF SPECIAL INTEREST TO ENGLISH AND SOCIAL LIVING TEACHERS

Appy, Nell: Pupils are People. Appleton, Century, 1941
Clarke, Harold A. and Eaton, Mary P. ed.: Improving Secondary School English. Noble and Noble, 1940
Coleman, Algernon: English Teaching in the Southwest. American Council on Education, 1940
Conrad, Lawrence: Teaching Creative Writing . Appleton, Century, 1937
Dodds, B. L.: That All May Learn. The Bulletin of the National Association of Secondary School Principals. November, 1939
Fries, C. C.: American English Grammar. Appleton, Century, 1940
Marquardt, A. H. and Walcott, Fred G.: Facts About Current English Usage. Appleton, Century, 1939
Murray, Elwood: The Speech Personality. Lippincott, 1937
Ogden, C. F.: The System of Basic English. Harcourt, Brace, 1934
Smith, Dora V.: Evaluating Instruction in English in the Elementary Schools of New York. National Conference on Research in English, 1941
Smith, Dora V.: Evaluating Instruction in Secondary School English, National Council of Teachers of English, 1941
Thouless, Robert H.: How to Think Straight. Simon and Schuster, 1939
Walser, Frank: The Art of Conference. Harpers, 1933
Conducting Experiences in English National Council of Teachers of English. Appleton, Century, 1939
Development of a Modern Program in English . Ninth Yearbook of Department of Directors and Supervisors, N.E.A., 1936
Learning the Ways of Democracy. Educational Policies Commission. N.E.A. 1940

III. IMPROVING SKILL IN READING (REMEDIAL AND DEVELOPMENTAL)

Center, Stella and Persons, Gladys: Teaching High School Students to Read. Appleton, Century, 1937
Dolch, E. W.: Manual for Remedial Reading. Garrard Press, Champaign, Illinois, 1939
Durrell, Donald D.: Improvement of Basic Reading Abilities. World Book, 1940
Gray, William S. : Reading in General Education. American Council on Education, 1940

Gray, William S.: Recent Trends in Reading. University of Chicago Press, 1939

Gray, William S. and Leary, Bernice: What Makes a Book Readable University of Chicago Press, 1935

Harris, Albert J.: How to Increase Reading Ability. Longmans, Green and Company, 1940

LaBrant, Lou L. and Heller, Frieda M.: An Evaluation of Free Reading in Grades Seven to Twelve, Inclusive. Ohio State University Press, 1939

Witty, Paul and Kopel, David: Reading and the Educative Process Ginn, 1939

The Teaching of Reading: A Second Report- Thirty-sixth Yearbook, Part I, American Council on Education, Public Schools Publishing Company, 1937

The Improvement of Reading in Secondary Schools Los Angeles City Schools Publication No. 358, 1940

IV. IMPROVING THE READING OF INTELLIGENT OLDER STUDENTS

Adler, Mortimer: How to Read a Book. Simon and Schuster, 1940

Richards, I. A.: Interpretation in Teaching. Harcourt, Brace 1938

Richards, I. A.: Practical Criticism. Harcourt, Brace, 1939

Richards, I.A.: Philosophy of Rhetoric. Oxford, 1936

Rosenblatt, Louise: Literature as Exploration. Appleton, Century, 1938

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READING TO EXTEND EXPERIENCE

Caroline Shrodes, Stockton Junior College

You may recall Aldous Huxley's picture of a 'brave new world' in which learning, along with procreation and the settling of economic problems, proceeds on purely scientific lines and takes no account of the human equation. He shows us a small boy sleeping while a voice from a box at his side speaks softly and persistently:

> 'The Nile is the longest river in Africa and the second in length of all the rivers of the globe. Although falling short of the length of the Mississippi-Missouri, the Nile is at the head of all the rivers as regards the length of its basin, which extends through 35 degrees of latitude...'
>
> At breakfast the next morning, 'Tommy,' someone says, 'do you know which is the longest river in Africa?' A shaking of the head. 'But don't you remember something that begins: The Nile is the...'
>
> 'The-Nile-is-the-longest-river-in-Africa-and-the-second-in-length-of-all-the-rivers-of-the-globe...' The words come rushing out. 'Although-falling-short-of..'
>
> 'Well now, which is the longest river in Africa?'
>
> The eyes are blank. 'I don't know.'
>
> 'But the Nile, Tommy.'
>
> 'The-Nile-is-the-longest-river-in-Africa-and-the-second...'
>
> 'Then which is the longest, Tommy?'
>
> Tommy bursts into tears. 'I don't know,' he howls.

We smile at this fantastic satire on scientific education, for we know that learning is ineffectual if it fails to take into consideration the need for motivation, the importance of the work to the context, and the necessity of relating context to human interests and development. And yet, ourselves the victims of years of emphasis on scientific and objective methods of testing knowledge, do we not as teachers sometimes continue to stress facts as ends rather than tools? We have learned too well from the educational psychologists their methods of measuring skills and tabulating results, too little their recognition of the need for motivation if we would develop the complete individual. We deny vigorously the charge that w4 are more interested in subject matter than in the student, yet we often seem to be trusting in some mystic transfer from the fact to the function, from subject matter to subjective embodiment in a satisfactory intellectual and emotional pattern of life. As teachers of literature, in which emotion and intellect are fused in the intricate web of human ex-

perience, we have too often been trained in pseudo-scientific graduate departments like that satirized in Doctor's Oral where the fate of the trembling student depends on whether or not his inquisitor shall succeed in confusing his memory of the number of lilies in the hand of the blessed damozel!

If we emerge from our study with some vestiges of that zest for life that first led us to the pursuit of literature, there is still danger that in the dusty archives of research it has lost for us the contact with reality which will enable us to become intellectual midwives between the experiences of the authors and those of our students. For it is reading as experience that I should like to stress. Through understanding the hopes, fears, loves, hates, frustrations, and triumphs of others our students may come better to understand themselves and the confused world in which they live. If we approach the study of literature from this point of view, the reading problem involves recognition of two related dangers: the projection by the teacher of his own particular views and orthodoxies upon the subject matter, and the projection by the student of his preconceived ideas and prejudices. Professor Theodore Morrison has entertainingly depicted the manner in which poetry may be circumscribed by the professor's special pleading. To Professor Dewing, the Parnassian, Dover Beach meant only a number of lines in which onomatopoeia failed to produce the desired aesthetic effects; to him a critic of poetry was not at liberty to pass judgment on a poet's thought; he could judge only whether he had produced a satisfactory work of art. To the neo-humanist, Professor Twitchell, who spent much of his time and eloquence urging that man's lower nature be repressed and his animal impulses kept in bounds by the exertion of the higher will, Dover Beach fell short because it made no assertion of a pesitive moral will. To the disciple of Freud, Mr. Mole, the poem merely afforded the rewarding evidence that Arnold, repressed in his childhood, possessed an erotic personality. To the Marxist professor, the same poem, ending in a futile plea for protection against the hideousness of the darkling plain and the confused alarms of struggle and flight, revealed that Arnold was too much a child of his class to disown it and fight his way to a workable remedy for social injustice. Each of these interpreters was bound by his prejudices. None say the poem steadily and whole. Each read it in the light of his own rigid critical predilections, points of view which if held in judicial balance might unite to give the student instruments for complete understanding.

As teachers we are more likely to be aware of the second pitfall to intelligent reading and interpretation, the tendency of the student to read into literature his own ideas and prejudices. Into his reading of the printed page are brought to bear the mores of his home town and the exhortations of his parents. The student asked to summarize an author's views on rugged individualism will project his views and his father's views upon the writer. By a process of wishful thinking he will convert labor sympathizer into red baiter, atheist into evangelist, naturalist into moralist, interventionist into pacifist. Sometimes the projection is more academic. I. A. Richards' experiments at Cambridge or Wright Thomas's at the University of Wisconsin are illuminating. When the student was exposed to a poem whose author and date were not revealed, he floundered hope-

lessly. He could not apply the cliches he had memorized about a given man or a given period. He was alone with the poem. And he had never learned how to read a poem, so busy he had been with books about books about poems.

How shall we avoid these obstacles to intelligent reading? How may we bring about a vital contact between the minds of students and authors, preserving the best legacies of the scientific objective attitude toward reading, yet fusing this approach with the recognition of the subjective values to be found in literature? It is possible through his reading to make the young student aware of himself and his immediate world as part of a larger pattern in whose apparent confusion he must find principles of coherence if he is to live with poise and sanity in the chaotic present and the problematic future. We must begin with the student, accepting his sceptical attitude, 'What have you got for me? What has this course in reading to do with my present problems or my future as an aircraft worker, or secretary, engineer, or housewife? Will it help me to understand the world of 1941? Will it teach me to answer the questions, personal, social, economic, that crowd in upon me?' We dare not be scornful of this utilitarian attitude. The world we are a part of has created and fostered it. To retreat from its demands, to adhere to the antiquated factual, inspirational, or purely aesthetic approaches to literary study is ultimately to cut ourselves off from the currents of life and to admit frustration and defeat. It is our problem to assume an aggressive role, to admit the validity of the student's demand for the practical and to show him how, in a very real sense, English may be the most useful subject in the curriculum. We must show our apathetic or scoffing student that literature is the very stuff of life and that it can contribute directly to his needs as individual and as citizen.

An undergraduate's experience is extremely limited. He is a product of his conditioning; his physical constitution, the side of the tracks he is born on, the health of his parents, the degree of their compatibility, the extent to which they accept and understand him, their economic status, the mores of the neighbors, to mention only a few of the more obvious determining factors. But these need not be limiting forces. Through understanding of them comes liberation and realization of one's potentialities. Through the extension of his personality made possible by wide reading, the student need not be insulated from the world but can in turn be all of the people he must understand and with whom he must live. All of the people he cannot, or dare not, or would not, be--great artist, humanitarian, martyr, adventurer, he may become. Through the subtle process of identification which great literature affords, he may sympathetically enter their lives and become immeasurably enriched through his understanding of their motives and drives, hopes and fears, loves and hates. He will come to understand better both himself and his world. With this extension of experience as a goal the editors of <u>Patterns for Living</u> worked out a program of reading which falls into two main divisions. The first deals with the problems a student is certain to meet in his search for personal satisfaction, beginning with selections which present

simple sense experience and continuing with those which illustrate the more complex satisfactions sought by the individual in his personal relationships, in the arts, in science, in religion, and in living philosophies which present a synthesis of the various personal quests. The second section treats of the relation of the individual to the social group, examining first the problems of college education, then significant social issues-- consideration of ideas of liberty and democracy, justice, war and peace, and visions of a better world. Through this dual approach, personal and social, it is hoped that the student may recognize literature as the autobiography both of the individual psyche and of a civilization. That the student may realize the continuity of human experience, we have placed classical selections in juxtaposition with modern. The dogma if totalitarian apologists today is not new to the student of Carlyle's Latter Day Pamphlets; the plight of the tenant farmer was of as grave concern to Swift as to Steinbeck; the mask of cynicism and mockery to hide the hurt of unrequited love was worn by John Donne as well as by Edna St. Vincent Millay.

The practical functioning of a reading program of this kind may be briefly suggested by a few illustrations. The world of the senses, objectively and subjectively considered, we take as our logical and psychological point of departure in our quest for understanding and extending experience. Arnold Bennett's essay, Seeing Life, beginning with a vivid account of a street accident, makes the students dramatically aware of how much they are missing, because of the dullness of their faculties for observation. Brief problems in recording immediate impressions and recalling past impressions arouse considerable interest as they see how much they have failed to see and recognize the limitless material of their surroundings that, adequately observed, assume new significance and life. Arnold Bennett's statement that 'no human phenomenon is adequately seen until the imagination has placed it back into its past and forward into its future,' becomes a sort of touchstone of experience to which the student is referred again and again as he attempts to analyze his impressions of people and places and to formulate his own interpretations of them. Halper's Young Writer Remembering Chicago and Mark Twain's account of his boyhood on a farm afford contrasting pictures which arouse images buried in the students' own memories of childhood in country or city. More concretely than in the essay, Seeing Life , they now recognize the force of Bennett's conclusions as to the relationship between people and their surroundings: 'Every street is a mirror, an illustration, an exposition, an explanation, of the human beings who live in it.' Awakened to a sense of themselves as a part of all they have met, all that they have met too a part of themselves, they are prepared to understand Proust's famous psychological insight into the web of sense experience, emotion, and thought and even to recognize with interest the same pattern in selections from Wordsworth's autobiographical poem and from modern writers such as Wolfe and Saroyan. The social implications of sense memories as intermediaries between past and present become evident in Hugo Munsterberg's The Memory of the Witness. The students are startled to realize that failure to sharpen their powers of observation not only limits enjoyment and understanding of life, but might conceivably have serious social consequences.

Finally, the individual and social pattern are dramatically tied together for the student in Willa Cather's story, Paul's Case. It is not enough to know what happened in Paul's Case but why and how. The average student on being asked what the story is about would say that Paul is a problem child who had contempt for his teachers, hate for his father, and scorn for his neighbors on Cordelia Street. After rebelling at home and school he stole a large sum of money, fled to New York, went on an orgy of spending, and committed suicide upon learning that his father was coming after him. This is both an accurate and a false account of Willa Cather's story. It is false because the facts, though accurately enough summarized, constitute but the merest background. The author's imaginative ordering of the facts adds up to a different picture. The student must ask and answer many questions before he may be said to have understood the story. Where must the responsibility be placed for Paul's tragedy? It is not enough to say that Paul was bad, neurotic, and finally psychotic. What forces shaped him? What was his family pattern, what were the social and economic forces which moulded his personality? What were the values of the Cordelia Street he abhorred? What were the means he used to escape from reality? What defense mechanisms did he employ and why those particular ones? How do you explain his arrogant manner before the faculty group? How is the story a severe indictment of our educational system? What changes do you note in Paul's escapes from reality after he is taken out of school and forbidden entrance to the theater and the opera house? What is the basis of Paul's interest in the arts? Why did the neurotic substitutions which Paul employed finally turn into a complete splitting of the personality? As the student answers these questions with the help of the instructor who must not only bring to bear on its interpretation a knowledge of the story as art form but relate his knowledge of sociology, art, and psychology to human experience, Paul comes alive. He remembers the Pauls he has gone to school with; he recognizes a little something of Paul in his own make up: Paul's father is the man next door; the residents of Cordelia Street take on a likeness to the people in one's apartment house. One's own past experience becomes illuminated and clarified by Paul's tragedy. To use Ely Culbertson's figure, one sees how the time bombs planted in one's early childhood are inevitably destined to explode in later years.

Gradually the student establishes of his own accord the integral relationship between what he reads and his own world, his own identity with the great artists and thinkers of the past and the present. In the end it is this perception of identity that determines what the student has gained from the course. Has he learned to question the printed page? Not how many lines he can scan accurately, nor how many titles he can attach to the appropriate author, but how much has he grown? How far has he extended the bounds of his experience? What new worlds have been unfolded before him? Have his ideas been challenged? Does he understand himself, his friends, and his world with deeper insight? Has the foundation been laid for Whitman's exhortation?

'You shall no longer take things at second or third hand, nor look

through the eyes of the dead, nor feed on the specters in books,
You shall not look through my eyes either, nor take things from me,
You shall listen to all sides and filter them for yourself.'

Let us consider now the reading of the printed page in a field other than English. I have chosen psychology to speak about because I have done some experimenting in this field, but the application of the theory I am presenting could be made equally well in the study of history, social sciences, and philosophy. In our typical text in psychology or mental hygiene for the beginning student we find academic definitions of terms and elaborate presentations of experiments with animals which often leave the reader both ignorant of, and indifferent to, problems of human adjustment which should be of momentous concern to him. It is not only that too many texts have failed to regard the students' needs and interests as of paramount importance, but that their presentation of such problems as do have immediate bearing for the student is sterile and academic. However, the teacher of psychology may call to his aid the immense resources of literature to illumine the text. Through the dynamic representation of psychological concepts in literature, the aura of mystery and erudition which surrounds the subject matter of psychology may be thrown off and the foundation laid for a more complete understanding.

Implicit in literature are all of the facts of psychology. The facts constitute the center of the experience which literature provides the reader. But the facts alone are not truth. They become true to the scientist when his imagination plays upon them and weaves them together into an organic whole. They become true to the poet or dramatist when his imagination has ordered them into a living organism. But the lay reader cannot readily enter into the imagination of the scientist, for the scientist separates human knowledge, and only those who share his technical equipment can see the whole. All persons are privileged, however, to enter into the imaginative experience of the artist, for art relates all knowledge to human experience. Art, like poetry, 'attaches emotion to the idea; the idea is the fact'! All those who possess the capacity of the artist, not as creator or craftsman, but as human being, can share his understanding. The artist, writing as a man to men, calls into play our universal heritage of sympathy, love, fear, and hate. He communicates to the emotions as well as to the intellect our common experience of life. While the scientist draws upon the fact or the case study, thus treating of the partial and the exceptional, the artist, dealing with the same material, by an imaginative process of selection and synthesis, presents a 'higher fact', that truth which is universal and functional. In his efforts to help the student to an understanding of the subject matter of psychology, the instructor may thus let the artist be a guide. At one time the writer uses the methods of the empiricist, recording human behavior in action; at another time he employs introspection, setting down the thoughts of human beings. But always he is the creator whose power it is to impress the reader with the universality of basic human experience.

In his process of selection the instructor must try to find that

story, poem, essay, or chapter of biography which seems most comprehensively and effectively to represent a given psychological concept. The concepts which best lend themselves to direct representation are those most fundamental to our daily lives. They involve those subtle and complex forces, physical, social, and economic, which motivate behavior, and they may illustrate the divergent ways in which we respond to such motivation.

The fact that some of the selections we would choose for this purpose were written before the study of psychology became an acknowledged sphere of learning does not in any way invalidate them; rather it attests to the immediacy and relevance of the materials of psychology to actual life. We recognize in Shakespeare, Donne, and Hardy patterns of emotion and behavior common to us today. But the artist has imposed design on the raw materials of life, and the detachment he has achieved illuminates the chaos of our own lives. Through the vicarious experience of literature one may approach that inward and outward integration of self which it is the purpose of psychology to foster. One sees that neither the individual nor his environment is static and unalterable, but subject to change and interaction, and that man has some power to direct both himself and his world.

Let us be very specific. The student encounters in his reading of a chapter on heredity a statement that our adjustment in life is determined by our physical constitution. He understands this concept intellectually, but does he really understand it until he has himself experienced that close alliance and interaction of body and mind-- either actually or vicariously? But let him read of Dr. Johnson's great ungainly bulk, his scrofula, his squinting eyes. Let him perceive how physical unattractiveness embittered a man so susceptible to the charms of a pretty woman that he remarked that he could think of no greater happiness than driving with one all day in a post chaise! Let him experience with Byron the need for compensating for his club foot by developing himself as an athlete to be admired despite his handicap. He will understand how Byron's early consciousness of physical inferiority afforded unconscious motivation for the romantic attitudinizing which made him alternately idol and scandal of Europe. He may then witness an opposite effect from a similar cause in Somerset Maugham's Of Human Bondage. Here the student may enter imaginatively into the life of Philip, whose club foot was a source of constant mental torment and shame to him. When his unhappiness became too great a burden to bear and his efforts to engage in the normal activities of his friends were thwarted, he convinced himself that life was a dream and retreated into a world of fancy and wishful thinking. Or our student may go back to his Shakespeare and experience Richard's resolution to be a villain when he realizes that his physical deformity will never permit him to play the coveted role of lover.

Especially in the field of family relationships will the student of psychology find enriched understanding through his perusal of literature. It is not enough for him to be told dogmatically that the mental health of the adult is in direct proportion to the sanity and fullness of his early family relationships; that family life is not an isolated phase of ex-

perience; that the key to the joy or sorrow, success or failure of the adult may often be found in the seemingly half effaced yet none the less indelible impressions of the child. Let him read The Way of All Flesh and experience with Ernest the perversity of his father, Theobald, and the pietistic and delusive outlook of his mother, Christina. Let our student learn the meaning of the mechanisms of rationalization and projection through his identification with Ernest; let him be the victim with Ernest of Christina's sadism both in its gross and subtle aspects; let him be overpowered by maternal possessiveness (when Christina pried into her son's life every fresh answer insidiously extracted was as (the lopping off of a hydra's head' which would give birth to half a dozen more new questions); let him view pre-natal influence as Butler sees it(if a man is to enter the kingdom of Heaven he must do so, not only as a little child, but as a little embryo, or rather as a little zoosperm!) let him share Christina's flights into fantasy ('a diadem was set upon her by the Son of Man himself, amid a host of angels and archangels who looked on with envy and admiration'); further he may acquaint himself with the super ego through Theobald's redoubtable conscience, understand the free association of ideas through Ernest's 'murdered confessions'. He may escape with Theobald by cutting little bits out of the Bible and gumming them with exquisite neatness by the side of other little bits. In short the novel reveals more graphically than any text the vast significance of the inter-relationships within the family in the early years of a child's life; of the unconscious penetration in the child of parental discord of the havoc wrought if the child is either overly accepted or rejected ('if Christina could have given birth to a few full-grown clergymen in priest's orders-- of moderate views, but inclining rather to Evangelicism... or if people could buy ready-made children at a shop of whatever age and sex they liked...'); and of the danger of breeding in a child hostility toward the opposite sex by overprotection.

Let us go on in our psychology text to the chapters on social and economic pressures. The student will read that human emotions and relationships are often moulded by the pressure of the group. But let him also read Vincent Sheean's subjective portrayal of anti-semitism in action on the college campus, sharply etching not merely the effects of an intolerant attitude upon its victims but the complete distortion of values and the sense of humiliation which comes to one who yields himself to it. To go on with our typical text the student reads that economic deprivation leaves an imprint upon the child's personality as well as upon his physical well being. Let him participate in Jean Christophe's experience as a sudden realization of another way of life comes to him when he sees his mother obsequious to the woman for whom she cooks and when he is himself taunted by the rich lady's children for wearing their cast off clothes. This awareness of his own inferior position, coupled with punishment from all sides, forces him to escape into a fantasy world in which the little rich girl, now submissive and pleading, begs him for mercy.

Again the student reads in his text: one's love may be compounded with fear; one's emotion may be an ambivalent one in which love alternates

with hate; or fear and hate may be so closely interwoven that they are scarcely distinguishable. Here, the text is illumined by Shakespeare's demonstration that the mental health of the individual is dependent upon a state of equilibrium maintained between the emotions and the intellect. At the very time that Othello protests that he will not be governed by his emotions but rather by his reason-- 'I'll see before I doubt; when I doubt, prove; and, on the proof, there is no more but this,-- away at once with love or jealousy!'-- he is taken in by Iago's diabolical machinations. He cannot separate his love of Desdemona from his hate of her, nor can he summon his intellect to temper his passion. Or let us turn to Richard Wright's Native Son for understanding of the subtle inter-relationship of fear and hate. Bigger's sense of deprivation and insecurity in a world in which the white man is supreme leads him to uncontrollable resentment against those who are white and rich. While he wills to express this hate overtly, at the same time he fears to give it expression. Hence he projects his fear onto one of his fellow conspirators and violently attacks him.

Finally, let us consider the neuroses. Our textbook will tell us that there are infinite shadings of neurotic expression, from the minor emotional and physical idiosyncrasies which make us individuals to the fixed manifestations which warp the personality and endanger its stability. These are dead words on a page until they come to life through the experiencing of these quirks or aberrations. For understanding of the oedipus complex we may better turn to The Silver Cord. The mother finds in her sons the romantic fulfillment which her marriage failed to bring. When full possession of her sons' affection is threatened in their marriage, an imaginary heart attack becomes a convenient weapon with which to attempt to hold it.

These examples should suffice to suggest that an academic subject like psychology may not only come to life through its dramatization in literature, but that the student's vicarious experience gives him a richer understanding than the mere study of the text can provide.

When we give the student mastery of the tools of communication, we must give him as well 'tools for life'. There can be and must be interaction between the two for the fullest development of each. We can best motivate intelligent reading as we help the student to integrate his experience and evolve a set of values by which to live. His behavior must not continue to merit George Weller's description of it in his college novel in which he likens the undergraduate to some snakes that Ralph Waldo Emerson encountered on his way to Cambridge back in 1834...'four snakes gliding up and down a hollow for no purpose that I could see-- not to eat, not for love, but only gliding...' In order to effect an adult metamorphosis our main emphasis, whether we teach English or psychology, the sub-freshman or the graduate student, must be upon the student's growth. As never before, we are realizing in our present emergency the need for men and women of keen intelligence, emotional balance, and humanitarian sympathies. Wordsworth's statement--

'Tis not in battle that from youth we train
The governor who must be wise and good'--

is as true in a world dominated by terror of Hitler as in one ruled by fear of Napoleon. Not only for the leadership but for the citizenship of the future we must stress the necessity of determining and establishing those values which shall preserve the meaning and dignity of the individual human life. As teachers of the humanities let us recognize our opportunities to guide young people in sifting conflicting opinions, in detecting the true from the sophistical, and in formulating lines of action based not on the expediency of the moment but on social vision.

SOME ASPECTS OF THE READING PROBLEM

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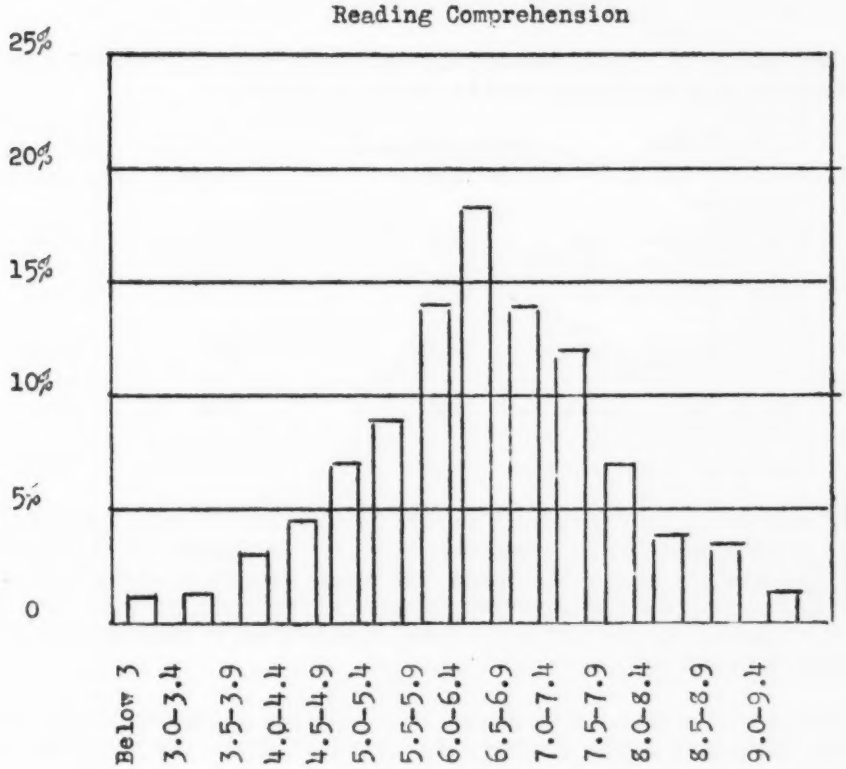
In coming before the conference at the last hour of the last day, one does so with the feeling that the field has been covered by previous speakers-- the nature of the reading process, challenging materials, stimulating techniques of presentation, the enviornments fostering achievement in reading. Yet, considering together the learning process with special application to reading may not be without value.

In learning to read, as in all learning, two aspects must of necessity receive consideration-- the conditions favorable to learning and the fundamental processes of learning.

Chart I-- Variations in Pupil Accomplishment in a Typical Grade-- is based on data for 1,444 6-B grade pupils and is representative of achievement in reading in practically every grade in elementary and high school that has been surveyed with respect to achievement in reading.

Chart I



The wide range in achievement is apparent, the 1,444 6-B pupils varying in reading achievement from below Grade 3 to Grade 9. A relatively small per cent of the pupils are at grade. The remaining pupils are about equally distributed, approximately one half being above, and one half below the average 6-B pupils in reading comprehension.

Some of the pupils above the average read as well as 7th grade pupils, others as well as 8th grade pupils, and others, a smaller number, equaling 9th grade pupils in comprhending what they read. On the other hand, some of the pupils below the average read as well as 5th grade pupils, others as well as 4th grade pupils, and others as well as average 3rd grade pupils and below.

Distribution according to grade placement of an eighth grade class and an eleventh grade class show similar variation in accomplishment in reading. Distribution according to grade placement of forty eighth grade pupils shows a small number at grade:

Table I

At grade for chronological age.....	5
At grade for mental age	8
At grade for reading achievement.....	4

Considerable variation in pupil accomplishment is apparent from the age-grade placements of the following pupils in this class:

	Chronological Age	Mental Age	Reading Achievement
Pupil 1.....	6.0	10.0	9.9
Pupil 40	10.9	6.0	6.0
Pupil 10.....	7.0	10.9	10.0
Pupil 38	9.0	9.9	6.0
Pupil 22	8.0	8.0	6.0

Pupil 1, a young child, showed a mental age grade placement of 10.0 and a reading achievement grade placement of 9.9. In contrast, Pupil 40, with a chronological age grade placement of 10.9, showed a mental age grade placement of 6.0 and a reading achievement grade placement of 6.0. Pupil 22 at grade for chronological age and mental age showed a reading achievement grade placement of 6.0.

Corresponding variation is apparent in a similar distribution of forty eleventh grade pupils, a small number only being at grade with respect to reading:

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Table II

At grade for chronological age	6
At grade for mental age.....	3
At grade for reading achievement.....	4

Variation in pupil accomplishment, as was the case in the class of forty eighth grade pupils, is again apparent in this class of forty eleventh grade pupils:

Table III

	Chronological Age	Mental Age	Reading Achievement
Pupil 1	12.0	5.0	6.0
Pupil 8	11.0	10.9	7.0
Pupil 40	10.0	16.0	15.0
Pupil 19	11.0	11.0	11.0

Pupil 40 is rather young chronologically for grade placement in the eleventh grade. However, grade placement in accordance with mental development and reading achievement showed grade placements corresponding to the third and fourth years of college. Pupil 1, with a chronological age grade placement of twelfth grade, showed a mental age grade placement of 5.0, and a reading age grade placement of 6.0, attesting to effort expended to improve reading. Pupil 19 should be rather comfortable, being at grade in all three distributions, for chronological age, mental age, and reading achievement.

These instances of variation in pupil accomplishment are typical and are introduced here to direct attention to the need of determining the mental development and educational achievement of the pupils in any grade with a view to intelligently and purposively directing their learning.

Individual variations are found in the ability to acquire knowledge and skills. In the same school grade, pupils differ in their ability to acquire the skills necessary to get thought from the printed or written page. It has been shown that the most rapid reader in a grade covers nearly twice as much material in a given time as the poorest; the pupil best in reading comprehension knows twice as many words as the poorest; the best speller correctly spells three times as many words as the poorest-- all factors related to the outcomes in reading.

These differences exist and represent the normal situation. It is important that teachers and school administrators recognize this fact and

make proper provision for these differences in the educational program.

As previously stated, in all learning it is important to provide conditions that are favorable to learning and to give consideration to the fundamental processes in learning. The wide range of achievement in reading comprehension, as shown in the Grades 6-B, 8, and 11, above, surely does not constitute a favorable condition under which learning can take place. Ordinarily, the adjustments that should be made are so numerous and varied as to discourage attempts on the part of the teacher to reduce this variation in reading accomplishment. When attempts have been made to narrow the range of achievement and to select the reading matter, taking into account the maturity, interests, and reading ability of the individual pupils, the results have been encouraging.

Results of thirteen similar experiments,[1] or investigations, concerning reading achievement in high school classes, are reported here, three in brief detail and the total results in summary:

Investigation 3

Description of group: Twenty-nine 9-B pupils whose reading achievement was below 7th grade reading level. Average reading grade level 6.1. Average I.Q. 98.6.

Procedure employed: Organization of special class which was given credit equivalent to 9-B English, but pupils were occupied with specific reading-habit-forming procedures during the daily 55 minute period.

Results: Reading ability grade level 6.1 rose to 8.7 with remedial instruction during one semester.

Investigation 7

Description of group: Twenty-four 9th grade pupils. I.Q.'s ranged from 87 to 157. Median I. Q. 104.

Procedure employed: Nine weeks' remedial work. Drills on rate, comprehension, and vocabulary.

Results: Median reading grade level of 7.0 rose to 9.0.

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1. Research Study of Reading Abilities in High School, on file in the office of the County Superintendent of Schools, Division of Research and Guidance. Results of this research and of other researches presented in Chart I and Tables I, II, III, IV, and V are used by permission of the Superintendent of Schools, Los Angeles County.

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Investigation 10

Description of group: Ninety 11th grade pupils. Two ability groups.

Procedure employed: Ten minutes per day for 10 weeks. Plan does not disrupt natural class program too much.

Results: A group, reading grade level 7.7 rose to 10.3
B group, reading grade level 6.7 rose to 9.6

Summary of the Investigations:

I. Description of the groups:
(a) In the experimental groups all high school grades were represented as follows:

Eight groups of 9th grade pupils
One group of tenth grade pupils
One group of eleventh grade pupils
One group of pupils from grades nine to eleven, inclusive
Two groups of pupils from grades nine to twelve, inclusive

(b) The reading grade placement ranged from grade three to grade eight with the median between grades six and seven.

(c) The I.Q. ranged from "low" to a median of 104 for the six groups for which the I. Q. was definitely recorded.

II. Procedures employed:
(a) The procedures varied in character and emphasis as to:
1. Organization of pupils on the basis of reading achievement
2. Organization of pupils on the basis of mental development
3. Organization of classes to allow for the use of different types of material and methods of learning
4. Instruction through use of special methods, or a combination of methods
5. Allotment of time to the experiment
6. Degree of intensity of motivation, individual guidance, encouragement, and supervision

III. Results:

1. All procedures were effective, some being more productive of results than others
2. Some classes showed as much as five years' gain at the end of the experimental period.
3. Some individuals showed even greater gains than did the class as a whole
4. Unfavorable attitudes changed for the better and discipline cases diminished.

III. Results: (continued)

5. Definite improvement was apparent in personal adjustment and reading ability in the groups participating in the several experiments.

In similar experiments undertaken with a view to improve reading achievement in elementary school classes, marked individual and class progress were observed, especially with respect to reading accuracy, speed, and comprehension. The groupings permitted of more careful observation of the individual difficulties, a differentiation in the amount of time necessary for the processing of perception and association and memory, more carefully planned material for instruction, and more frequent relearning at the point where relearning counted for each individual.

In attempting to improve the general situation in reading, more knowledge is needed concerning the individual differences and their relation to accomplishment in reading. Ability to read depends upon a number of factors of prime importance among which is the degree of mental maturity of the individual. In all types of growth that have been measured, it is found that wide individual differences exist in the rate and extent of growth and that a given individual in comparison with other individuals does not grow equally rapidly in all phases of development. Individual differences are apparent at birth and become more evident as the individual grows older. Various functions develop at different rates and reach their maximum at different times. Individuals of the same age differ greatly in every characteristic that has been measured or estimated-- in height, weight, strength, and susceptibility to disease; in nervous stability, in mental development, and in mental balance. Individuals differ in ability to tolerate thwartings-- to make mental adjustments to perplexing situations. Some are very stable in performance under extreme effort; others when strongly motivated become confused and show a decrease in efficiency. Again some are disturbed by factors which stimulate others to their best effort. Individuals differ in their response to the most important and prevalent human motives. In studies on motivation it has been found that some persons require very little motivation to put forth their best effort while others require considerable.

An analysis of the results of individual psychological studies made of two high school pupils by means of intelligence tests and reading achievement tests is revealing:

Table IV

Pupils		Virgil		Gus
Chronological age		14-7		17-0
Grade Placement Data:				
Actual Grade Placement		7.8		10.4
Chronological Grade Placement		9.2		12.4
Otis Group Test* (Virgil)	I.Q. 63	3.8		
Terman Group Test* (Gus)			I.Q. 72	5.9
California Test of Mental Maturity- Non-Language Section	I.Q. 93	8.1	I.Q. 81	7.3
California Test of Mental Maturity - Language Section*	I. Q. 60	3.3	I.Q. 67	5.2
Revised Stanford Binet Test of Intelligence - Form L	I.Q. 104	9.9	I.Q. 81	7.4
Stanford Reading Achievement* (Virgil)		3.3		
Progressive Reading Achievement * (Gus)				6.5

* Test results dependent on ability to read

It is evident that Virgil's mental development is well beyond his reading ability. In the two tests of intelligence not dependent on ability to read, his grade placement is well above that obtained by tests dependent on ability to read. Results on the California Test of Mental Maturity, Non-Language Section, give him a grade placement of 8.1. On the Stanford-Binet, he shows an intelligence grade placement of 9.9, approximately that of his chronological grade placement. On the three tests dependent on ability to read -- the Otis Group Test, the California Test of Mental Maturity, Language Section, and the Stanford Reading Achievement Test -- the results are consistently low. These results point to the fact that Virgil's educational retardation is not due to mental immaturity but to inadequate command of the reading skills. His educational progress will best be furthered by a remedial reading program adapted to his particular needs and interests.

Consider for a moment the case of Gus, a 17-0 year old pupil in the B-10 grade of a senior high school who normally should be in the twelfth grade. From an inspection of the results in the table, it is apparent that Gus is considerably retarded mentally and educationally. He has been making normal progress for his degree of mental development. His needs will be best met through a modified program, with the major emphasis on vocational work within his capacities and interests.

One final consideration remains. In the new programs we hope will be arranged for both Virgil and Gus, it will be of advantage if we could know something about the fundamental processes employed in their attempts at learning, what strengths, what weaknesses may be modifying outcomes, and accounting for varied achievement in the past. Perhaps the same inadequacies may continue to affect achievement in the recommended program of work calculated to provide conditions more favorable to learning.

An analysis of the test results of Revised Stanford-Binet Test Scale, Form L, for both these pupils gives further insight into the nature and strengths of their mental processes which, if taken into account in learning situations, may directly modify results. (See Table V).

Virgil shows a development beyond his chronological age in language development (oral vocabulary), in control of complex thought processes according to a guiding idea, and in logical reasoning. The test results indicate that he had some slight difficulty in recalling visual impressions of increasingly complex situations. It would appear from the table that his memory is better for auditory impressions since he was successful with tests of auditory memory at Year XIV. This table does not show that he failed in tests of this kind in years X, XI, and XII, indicating uncertain command of the associative processes operating in memory. Weakness is again evident in ability to combine related elements, in other words, to see elements as parts of a meaningful whole. Failure in the test of arithmetical reasoning placed at year XIV is significant in view of successes in several tests designed for the average adult, among which is the test of logical reasoning.

In none of the tests does Gus show normal development for his chrono-

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Table V

Pupils	Highest Year in Which Successes are Recorded: Virgil	Gus
Chronological age	14-7	17-0
Language development	XVI*	XIV
Memory for auditory impressions	XIV	XI
Memory for visual impressions	XIII	XI
Sensing similarities and differences-visual impressions	XIV	XIV
Sensing similarities and differences - auditory impressions	XIV	XIV
Complex Thought Processes:		
A. Controlling associations	XVI*	XIII
B. Combining related elements	XIII	XII
C. Reasoning:		
Arithmetical	-	-
Logical	XVI	XIV

* Average Adult

logical age. The test results indicate three years' retardation in language development (oral vocabulary), in sensing likenesses and differences, presented either visually or auditorialy, and in logical reasoning. Even greater retardation is indicated in ability to control associations in thinking and to see elements as parts of meaningful wholes. His greatest weakness is in memory, both auditory and visual. Failure in the test of arithmetical reasoning indicates weakness in this process also.

Weakness in tests of memory and of arithmetical reasoning are common to both of these boys. Failure in the tests of memory may be due to some sensory defect. It may be due to difficulty with control of attention due to emotional disturbance or other cause. Failure in the test of arithmetical reasoning may be due in part to the same causes since the problem in question must be read by the individual taking the test and solved without aid of paper and pencil. It is possible that failure may be due to inadequate command of the fundamental skills rather than to poor reasoning ability since greater ability is shown in test of logical reasoning.

Whatever the cause, it is a matter of prime importance to discover what it is and to take it into account in planning the future program for these boys. In these two instances, and indeed in all other attempts to provide conditions favorable to learning, it is obviously advisable to give thought to the fundamental processes of learning.

A TEACHER LEARNS ABOUT READING

The play, "A Teacher Learns About Reading", was written cooperatively and produced as the final number of the Reading Conference by members of the 1941 Summer Seminar in Reading.

The play takes place in a school room. The teacher is very concerned about the quality of "book reading" which the students produce. She pays little attention to pupil interest, factors which interfere with successful reading of print, such as poor seeing, or to producing an experience background for the word symbols presented in the texts. Reading, for her, is "book reading" and she expects to develop proficiency by drill and constant attention to habit formation. She fails to recognize the many leads to productive learning which the pupils give by their questions and behavior.

The play brings out these points and proceeds to show how the teacher is finally led to see that reading is a process much more basic than she had supposed and also to sense that she must use "primary reading", i.e., the reading of things, to implement "secondary reading", i.e., the reading of symbols of things.

The Reading Seminar consisted of a general session and supplemental sessions concerned with (1) problems of visual development, (2) visual aids to learning, (3) "primary reading" to disclose the "stories in stones" (earth sciences), (4) speech, and (5) arithmetic. The general theme of the play that "reading is the process of making discriminative reactions" has its origin in the general session section. The special episodes occurring during the school day are each designed to characterize some aspect of the total reading problem which was emphasized in one of the supplemental group sessions.

The scripts were prepared by a committee and the casting and production was done entirely by the general committee. The whole project was accomplished in less than a week's time. We believe teachers and administrators, to say nothing of parents and even children, will find interesting ideas expressed by the characters.

-- Peter L. Spencer

Prologue

There was a time when school was "kept"
and readin' went by rule
And teachers all were quite adept
At keepin' after school
Because the children were so dumb
They couldn't learn to read
No matter how much they were drilled
And how much A B C'd,

A Teacher Learns About Reading 2

They wasted all their precious time.
Drew pictures on their slates.
To read a page out loud in class
Caused them to hesitate.
Like parrots, they could recitate
The presidents in turn,
But what the printin' really meant
The teacher'd simply spurn.
To look at pictures was taboo
It simply wasn't done;
But tho' it might provoke a whack
It still was lots of fun.
To read a bit of nature's lore
Without a slate or book
Meant Johnny was a dullard
And lacked in what it took.
Now readin's changed an awful lot,
We don't just read from books,
We read the sky,
We read our friends,
We read the seas and brooks.
To answer questions parrot-style
Is considered quite passe
A child whose concepts are in line
Will surely head Class A.
Moving pictures are OK,
Comics are not banned,
Better vision is proclaimed.
For children in our land.
We don't stop this readin' plan
E'en when we graduate.
It's with us every day we live
Until we're called by Fate.

Stage set as in Our Town
Scene: A schoolroom
Teacher enters. Writes reading assignment by pages on board. Rings bell. Children file in. Stand by seats and sing "Good Morning to You". Teacher taps bell. Children sit and all but one don blinders.

Teacher: Your reading assignment is on the board. Open your books and study your reading. Johnny, why aren't you wearing your "non distracters"? Put them on so you can keep your mind on your reading.

(Johnny puts on blinders. All work quietly for awhile. Jim takes rocks out of pocket and examines them stealthily for awhile. Suddenly drops them. Scrambles to pick them up.)

Teacher: Jim, what are you doing with that trash in the schoolroom? Bring it to me.

(Jim takes rocks to desk, dropping some enroute.)

Jim: Teacher, why do some of these rocks have holes in them? And look at this one. It looks like glass.

A Teacher Learns About Reading 3

Teacher: The idea of wasting your valuable time looking at rocks. You are supposed to be reading. Now, get to work.

Is that another one of those cheap comic books you have there, Elizabeth? Didn't I tell you not to bring any more of them to school? Now this one is going into the waste basket to be burned.

(Teacher picks up the book gingerly and drops it into wastebasket.)

Elizabeth: Please, teacher, can't I have it back? I like the pictures.

Teacher: No, indeed. Funny pictures are just a distraction from your reading.

Jane:(Rubbing eyes) I can't read. My eyes hurt.

Teacher: Never mind your eyes. Get on with your reading.

Is that another airplane picture you have there, Jack? I never saw such a child. Now, for the last time, I want all of you to read your lesson. It is almost time to recite and you have just wasted your time.

(Dr. Reading enters quitely.)

Teacher: Good morning, Dr. Reading. You are just in time to hear our reading recitation, although, I am sure I don't know what they have learned with their minds on rocks, comic books, pictures, and airplanes!

All right, children. We shall see what you have learned from your reading book. Mary, you may read first.

(Mary rises and begins to read orally.)

Mary: This region is noted for its petri----

Teacher: Petrified

(Teacher writes word on board.)

Mary: Petrified trees. What is petrified?

Teacher: Look in the dictionary and find out.

(Mary looks up word.)

Mary: Petrified-- made rigid, such as organic matter made inflexible by cal-- cal—

Teacher: (Looking at dictionary) Calcareous.

Mary: By calcareus deposits.

Johnny: What does that mean, teacher?

Elizabeth: Well, I know rigid means you can't move. But trees don't move around any way. Are all trees petrified?

Teacher:(Completely exasperated) You ask the silliest questions. If you want to act like a dunce, you can just be one.

(Puts Elizabeth on dunce stool. Turns to Dr. Reading in despair.)

You see what a time I have trying to teach reading. What am I to do?

Dr. Reading: Do you really want to know?

Teacher: Of course I do. I want these children to pass.

Dr. Reading: Then you must teach "primary" as well as "secondary" reading.

Teacher: "Primary reading". Why, they've had primary reading. This is a sixth grade.

Dr. Reading: "Primary reading" is something we all must do all of our lives.

Teacher: I don't understand. Isn't primary reading what children learn when they start to school?

Dr. Reading: You mean reading printed word symbols? No that is "secondary" reading. To do "primary" reading we read the things around us.

Teacher: I still don't see. It's very confusing.

Dr. Reading: Perhaps I can help you to see. Now your class encountered

A Teacher Learns About Reading 2

They wasted all their precious time.
Drew pictures on their slates.
To read a page out loud in class
Caused them to hesitate.
Like parrots, they could recitate
The presidents in turn,
But what the printin' really meant
The teacher'd simply spurn.
To look at pictures was taboo
It simply wasn't done;
But tho' it might provoke a whack
It still was lots of fun.
To read a bit of nature's lore
Without a slate or book
Meant Johnny was a dullard
And lacked in what it took.
Now readin's changed an awful lot,
We don't just read from books,
We read the sky,
We read our friends,
We read the seas and brooks.
To answer questions parrot-style
Is considered quite passe
A child whose concepts are in line
Will surely head Class A.
Moving pictures are OK,
Comics are not banned,
Better vision is proclaimed.
For children in our land.
We don't stop this readin' plan
E'en when we graduate.
It's with us every day we live
Until we're called by Fate.

Stage set as in Our Town
Scene: A schoolroom
Teacher enters. Writes reading assignment by pages on board. Rings bell. Children file in. Stand by seats and sing "Good Morning to You". Teacher taps bell. Children sit and all but one don blinders.

Teacher: Your reading assignment is on the board. Open your books and study your reading. Johnny, why aren't you wearing your "non distracters"? Put them on so you can keep your mind on your reading.

(Johnny puts on blinders. All work quietly for awhile. Jim takes rocks out of pocket and examines them stealthily for awhile. Suddenly drops them. Scrambles to pick them up.)

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(Jim takes rocks to desk, dropping some enroute.)

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A Teacher Learns About Reading 3

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(Teacher writes word on board.)

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Teacher: Look in the dictionary and find out.

(Mary looks up word.)

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Teacher: (Looking at dictionary) Calcareous.

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Johnny: What does that mean, teacher?

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Dr. Reading: You mean reading printed word symbols? No that is "secondary" reading. To do "primary" reading we read the things around us.

Teacher: I still don't see. It's very confusing.

Dr. Reading: Perhaps I can help you to see. Now your class encountered

this printed symbol petrified. They needed some experience to help bridge the gap between the abstract symbol and the concrete thing. This will illustrate.

(Takes piece of petrified wood from his pocket.)

Here is a piece of petrified wood. Take it in your hand, Johnny.

Johnny: Why it looks like wood, all right, but its hard like a rock.

(Knocks it against a desk.)

Sarah: Let me feel it, Johnny.

Jane: Let me.

(Object is passed around.)

Sarah: It's rough!

Jim: Look at the lines. They make circles.!

Dr. Reading: Those are the rings that tell how old the tree was when it died.

Jim: Do all trees have rings?

Dr. Reading: Yes. We call them annual rings. The tree gets new wood annually-- that is every year. That new wood forms a ring around the trunk.

Sarah: Let's see how old this tree was. One, two, three-----

Johnny: I never saw any petrified trees. Are there any near here?

Dr. Reading: No. They are not found everywhere. If you should go to visit this part of Arizona, though, you could see a petrified forest.

(Dr. Reading points to a map).

Sarah: We have pepper trees near our house.

Mary: Some trees are awfully big. Once I saw some so big that four of us could get inside a hole in the trunk.

Johnny: I don't believe it. But I wish we could see some trees with annual rings.

Dr. Reading: Why not take the class to the park to study some living trees?

Teacher: Oh, I don't know about taking them out of the classroom. We couldn't very well take our books with us.

Dr. Reading: There are many visual aids that you can bring into the schoolroom to help the children read.

Teacher: Visual aids to help children to read? What are they?

Dr. Reading: Well, your map is one. Others listed according to their concreteness are: (1) the excursion such as a trip to the park to see the tree rings. (2) museum materials or specimens. (3) motion pictures, (4) still pictures, (5) graphic material including cartoons and maps. You have used maps, but you need to use many visual aids to help the child interpret the difficult word symbols. Read things first, remember.

Teacher: Well, I still have to teach them to read.

Dr. Reading: But read what?

Stunt for Earth Science Group

Dr. Reading: Jim, let's see your rocks. Where did you find them?

Jim: Near Cucamunga.

Dr. Reading: Did you know that every rock has a story to tell?

Jim: A story to tell? (Puts rock to ear) I can't hear it tell stories.

Dr. Reading: Oh, of course not,-- not that way.(picks up book) This book tells a story but you couldn't read it until you learned what the words meant.

A Teacher Learns About Reading 5

Jim: But rocks don't have words!
Dr. Reading: Oh yes they do. See these little shiny parts? And look at the holes, and feel the weight. All these things and more too are sentences. In fact this rock has a very interesting story to tell, if you could read it.
Jim: How can I learn to read it?
Dr. Reading: Listen! I believe I hear some rock readers coming. Perhaps they'll tell you how to read the rocks you have in your hand.
(The Earth Science group enter with picks, and bags. They are on a field trip. One wears dark glasses and a sun helmet. They march in reciting:)

With picks-tap-tap-tap-tapping into everything,
Slide-slide-slide-slide-sliding down the mountain side.
Rocks-rocks-rocks-rocks-chips flying all around again;
For no one loafs around George

(Everyone looks at them in amazement)

Teacher: Well, who are you, may I ask?
Rock-Tappers: We are the rock-tappers. We read rocks.
Cho. We read rocks.

Here is a boy who wants to learn,
To you this should be of great concern.

Don't stand in his way.
We'll give him a lesson this very day.

Cho. This very day.

George! George! George!
Tell Jim what his rocks can say.

Cho. When one is versed in reading rocks
Lots of stories the knowledge unlocks.

George: Let's see your rocks, Jim. (Jim hands George the rocks and George examines them closely with a hand lens)
Well, Jim, here is the story this rock tells.

(Tells story)

Rock-tappers: Now, let us tell the story, Jim
We can tell it with lots of vim

(Seriously)

This is the rock that Jim found.

These are the holes
That lived in the rock that Jim found.

A Teacher Learns About Reading 6

This is the gas
That filled the holes
That lived in the rock that Jim found.

This is the glass
That imprisoned the gas
That filled the holes
That lived in the rock that Jim found.

This is the volcanic lava flow
Hot and molten and ready to go,
That carried the glass
That imprisoned the gas
That filled the holes
That lived in the rock that Jim found.

This is the molten magna red
Bubbling and boiling in its restless bed,
That found a crack in the earthy crust,
And pushed its way in a temper rough,
Which caused the volcanic overflow,
Hot and molten and ready to go,
That carried the glass
That imprisoned the gas
That filled the holes
That lived in the rock that Jim found.

This is the air on the earth's outside
That got so hot it nearly fried,
But it cooled the molten magna red,
Bubbling and boiling in its restless bed,
That found a crack in the earthy crust,
And pushed its way in a temper rough,
That caused the volcanic overflow,
Hot and molten and ready to go,
That carried the glass
That imprisoned the gas
That filled the holes
That lived in the rock that Jim found.

****

This other rock that's smooth and black
Was part of the self-same lava track,
But there were no gasses to make little holes
As quickly the glassy mass was cooled.
So this one cooled in a heavy mass
And came to be known as volcanic glass.
The holey one that's light in weight
Is pumice stone and the others mate.

A Teacher Learns About Reading 7

All this is the story as told by us
Without any frills and little fuss.
Your lesson now is about complete,
And now, dear teacher, may we take our seat?

Teacher: Yes, for goodness sakes, do sit down. You make my head swim.
(Rock-tappers sit.)
It's time for your arithmetic, children. Eyes this way, feet on the floor, hands on desk. We are now ready for arithmetic combinations. As I call your name, give me the answer. Ready...(shuffles cards.)
Sarah:(Speaking out of turn) 6
Teacher: Write that combination one hundred times after school for speaking out of turn.
Sarah: Yes, ma'm.
Teacher: The next combination. You, Benny; 4 plus 4
Benny: (counting on fingers) One, two,---
Teacher: (Slaps Benny's hands) Now sit on your hands for half an hour. Next combination please. We'll repeat this together. 12. Write it on the board. Close your eyes and repeat in unison.
Children: 6 plus 6
Teacher: Repeat, please. Again-- Speed it up a little bit. Take pencils out, take paper out, name on right side, date on left side, arithmetic on the middle. Everyone write the combination we just finished drilling on ten times apiece. Everybody busy and quiet now.
(Dr. Reading comes up to desk where airplane picture is.)
Dr. Reading: Who brought this picture in?
Jack: I did. I brought it.
Dr. Reading: What do you know about the B-19?
Jack: I saw it flying over to March Field.
Mary: It's the biggest bomber in the world.
Dr. Reading: How big is it?
Benny: (Still sitting on his hands.) The tail is about three stories high.
Dr. Reading: How tall is a story?
Benny: I know how tall a story is. Big department stores have s tories.
Dr. Reading: Do you know another name for story?
Mary: The elevator takes us to the different floors.
Jim: I lived in an apartment house that had different levels.
Jack: I live in a one story house.
Sarah: My dad works in a three-story building. His office is on the third floor.
Jim: Your dad's office is about as tall as the tail of the B-19.
Dr. Reading: That is a good comparison.
Benny: Boy, it would take a lot of gasoline to make that plane run.
Mary: How much gas?
Dr. Reading: (Reads from picture.) The plane carries enough gas to travel from New York to Norway and back.
Johnny: Our car holds enough gas to carry us to Bakersfield and back.
Benny: That's a transport as well as a bomber.
Dr. Reading: That's right, Benny. Many men are able to ride in it.
Jim: How many men can ride in the B-19?

Mary: I know. One hundred twenty-five.
Teacher: Isn't it time to get back to our arithmetic.
Dr. Reading: You haven't been away from your arithmetic.
Teacher: Oh, dear, I suppose you are right. We have been having arithmetic. Arithmetic is more than number. It is quantity and relationships among quantities. So many problems present themselves. It's very confusing. For instance, what am I to do with Elizabeth?
Dr. Reading: What's the matter with her?
Teacher: She just can't learn to read. Sometimes I think she doesn't want to-- I don't know what to do with her.
Dr. Reading: May I make a suggestion?
Teacher: I wish you would.
Dr. Reading: In the first place, let's take off that dunce cap-- and then let her sit in her own seat. (Elizabeth sits down front.) Elizabeth, you look as if you were new around here.
Elizabeth: I am. I've just been here a couple of weeks.
Dr. Reading: Is that so?
Elizabeth: We came here in a car-- my whole family.
Dr. Reading: How many are in your family?
Elizabeth: Seven-- Bill, Joe, Betty, the baby, mother, father, and me. We came in an old car clear across the desert.
Dr. Reading: Did you like that?
Elizabeth: Part of the time it was fun, like the time we camped by a stream and went wading and Joe caught some fish and the baby nearly fell in-- but part of the time it was awful hot.
Dr. Reading: Did you come across the Mohave Desert?
Elizabeth: Yes, that's where it was so hot.
Dr. Reading: Did you know that a long time ago that desert was under water?
Elizabeth: You mean like a river?
Dr. Reading: No. Like an ocean.
Elizabeth: What happened to the water?
Dr. Reading: Well, the surface of the earth changed. The heavy parts slid down and the lighter parts were shoved up. The land continents rose out of the ocean, Geologists-- those are people who study the earth-- have found fossils of sea creatures imbedded in those very desert rocks.
Elizabeth: You mean, right where we came across in our car?
Dr. Reading: That very place.
Elizabeth: I wish I could see some.
Dr. Reading: You can when you go to the museum. You can read about them in your book, too.
Elizabeth: I can't read.
Dr. Reading: Why not?
Elizabeth: I'm just dumb, I guess.
Dr. Reading: I'll tell you what let's do. Suppose you tell me something about the Mohave Desert, and I'll write it on the blackboard for you.
Elizabeth: All right. We drove across the Mohave Desert in our automobile. It took us a long time. We saw some mountains and canyons and lots of queer rocks.
Dr. Reading: Now can you read what you told me to write down for you?
Elizabeth: (Reads) Is that the way you spell Mohave?

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Dr. Reading: Good. I thought you told me you couldn't read.
Elizabeth: I didn't think I could. But that's different. That's something I like-- and books aren't. I don't like to read books.
Dr. Reading: Don't you know that books are just something that somebody else has thought up in his head-- like you did-- and written down?
Elizabeth: I never thought of that. Then when I read a book, am I just reading what somebody else thinks?
Dr. Reading: Yes. Somebody is talking to you on paper. That's all.
Elizabeth: Gee! I wish somebody would talk to me about things I like.
Dr. Reading: Well, here's somebody who'll talk to you about the Mohave Desert, if you'll listen with your eyes.
Elizabeth: (Laughs) I listen with my eyes? Do I read with my ears then?
Dr. Reading: Exactly-- You read with your nose, too.
Elizabeth: When my mother bakes cookies, I do! What else do I read with?
Dr. Reading: With your fingers.
Elizabeth: When I felt Jim's rocks, you mean?
Dr. Reading: Yes, and you're good at that I noticed.
Elizabeth: Then reading books is just one way of reading, isn't it?
Dr. Reading: Yes, but a very important way, too.
Elizabeth: Can I read this book you gave me instead of the other book?
Dr. Reading: What's the matter with that one?
Elizabeth: It hurts my eyes to read it. The paper's shiny and the print's too little.
Dr. Reading: Do you like this book better?
Elizabeth: Yes, and I like the pictures, too. That's just the way it looked when we came across. Teacher, can I read this book?
Teacher: (Hesitantly) Well, it isn't your lesson.
Elizabeth: But it looks like fun. Please let me.
Dr. Reading: If you'll let her read that book, a great many of your reading problems will be solved.
Teacher: Oh, very well, then. I suppose it's all right.---
Jane, what is the matter with you?
(Jane is squirming around)
Jane: My eyes hurt.
Teacher: You are always using your eyes to excuse your inattentiveness. There's nothing wrong with your eyes.
Dr. Reading: Are you sure of that? Are you acquainted with these--
(Lights go out. Teacher seats himself at desk and turns on gooseneck lamp. Goes through contortions to show his discomfort with the lights)
Teacher: Johnnie Jones- hyperopia, poor fusion. Mary Thompson- myopia exophoria, suppresses right eye. Edward Gonzalez-- poor fixation, astigmatism (sighs heavily) Well what do these words mean, and what have they got to do with reading? (rubs eyes and head) My poor head-- even my eyes hurt (drops head on arms)
Enter GHOST OF ASTIGMATISM. Slinks in, speaks in hollow voice.
Ghost: I am the ghost of astigmatism; I cause blurred vision. I bother many people: the nearsighted, the farsighted, the cross-eyed, the wall eyed and people with otherwise normal vision. I really get around! Why, right now I am keeping Johnnie Jones from learning to read. I make it hard for him to distinguish certain letters, such as b and h. I make

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Mr. Smith's ride to work miserable. I blur the printing on all the signals and signs so he is almost distraught trying to read them. He's thinking of selling his car. And that's not all. I give Mrs. Brown a headache every time she tries to read. I won't allow her eyes to focus properly on the entire word. I LIKE my work.

(Goes behind desk)

Enter Ghost of Myopia: My nickname is nearsightedness. I'm really myopia and do I have fun! I keep the little boys and girls from reading the blackboard. I put funny fuzzy edges on the baseball so the children hit when it isn't there. I put furry outlines on distant objects and make the moon look like a Chinese lantern. Of course, the little boys and girls see very well at close range, and often exceed at reading the printed word symbol, but I can still fool them. I drop a veil of fog over their best friend's faces across the street, so that they call "Hi Joe" when it's really Jim. All in all, I leave them very happy with their books and toys at close range, their center of interest, but beyond their own immediate little circle they are lost in a circle which, to them, is just one great big meaningless blurr.--- (Goes to side of desk)

Enter Ghost of Hyperopia---: I am the ghost of farsightedness. I seldom hinder children when they are looking afar: but I keep them from seeing the printed page clearly. I puzzle teachers. They do not understand why the children I affect can read that which is written on the board, yet stumble over the same words printed in their books. I make children dislike books and long for the out of doors. I take away the child's attention when he is attempting close work. I cause him to look out the window. I shift his attention from the work at hand to more distant goings-on. I make the child sleepy-- he rubs his eyes and complains of sand in them. I give him headaches. I contribute to Esophoria and all the ills she causes. Because of all the things I cause the child hates to read books. I am the sworn enemy of books.

(Goes over to side of Myopia)

Enter Ghost of Esophoria---: I am Esophoria. I cause print to double and blurr. Today I had Patty crying because she said the writing in her book jiggled so she couldn't read it. I am so quick that no one knows what I do. Do I drain children's energy??? Sometimes they try to get rid of me by using only one eye and they don't even know they do it!

(Goes to one side)

Enter Ghost of Exophoria---: I am Exophoria. Eso and I may not look alike but we do practically the same things. Nobody suspects I'm around either. I had to laugh when the teacher told Tommy he was just lazy. She didn't know I'd been working on him. If these teachers ever find out how we phorias make the children tired and restless we're done for!

(Goes to one side)

Enter Ghost of the Blind Spot---: I am the ghost of the blind spot. When I grow up I get large and fat and cause lots of trouble. I'm a greedy ghost--

A Teacher Learns About Reading 11

I take away good vision. I slow up children's reading-- I make them stumble over feet in the aisle- It's my fault that Bill gets caught shooting paper wads 'cause he can't see the teacher out of the corner of his eye. My pet activity is causing bicycle and automobile accidents. Sometimes I'm fed by toxic poisoning and become hard to handle. Usually, however, I'm amenable to reason-- but I'm sly and secretive and few know of me so that others get blamed for my tricks.

(Goes to side of desk)

Enter Ghost of Poor Fixation --- : I am poor fixation ability. I cause one eye to fixate on one word and the other eye on another word. That really fools 'em. I also cause regressions. Because of me children sometimes lose their place and sometimes go back to the line above or below. When I'm feeling real mean I even make the child see double. When I'm around it's no wonder a child can't read smoothly from left to right. How I love dark dim lights!

Ghosts now surround teacher leaning over him they point finger and chant-

Ghosts: The visual anomalies will get you if you don't watch out!

(Ghosts sneak off stage)

(Teacher wakes up, stretches-)

Teacher: Now I understand the big part vision plays in life. (Teacher gets up and goes off)

(Bright lights as in beginning)

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